# THE IRON AGE

Established 1855 — New York, December 8, 1910 — Vol. 86: No. 23

Published Every Thursday by the
DAVID WILLIAMS COMPANY
14-18 Park Place, New York

Entered at the New York Post Office as Second Class Mail Matter.

Subscription Price, United States and Mexico, $5.00 per Annum; to Canada, $7.50 per Annum; to Other Foreign Countries, $10.00 per Annum. Single Copies, 20 Cents.

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# Cutting Down Pig Iron Output

## Further Restriction Promised This Month

## More Rolling Mills on a 50 Per Cent. Basis—Record Lake Ore Shipments

November pig iron production was 1,909,780 tons for coke and anthracite iron—the smallest month's output since May, 1909. No other month since June of last year has fallen below the 2,000,000 ton mark. The daily average last month was 63,659 tons, against 67,520 tons in October. The shrinkage in steel works furnace output is responsible for all the falling off; merchant furnaces, under the alternation of slower and faster driving which has prevailed for some weeks, making slightly more iron per day in November than in October.

The net decrease in active blast furnaces in November was 13. Other furnaces will give up the struggle before the end of the year. Even with the more rapid curtailment of the past month, stocks continue to increase. The United States Steel Corporation is now operating 54 per cent. of its blast furnace capacity, against 55 per cent. one week ago.

Pig iron production December 1 was at the rate of about 22,750,000 tons a year, or 1,600,000 tons less than on November 1. An output of 27,200,000 to 27,300,000 tons is now indicated for 1910, or 1,400,000 to 1,500,000 tons more than the record made in 1909. Of this increase fully half has been added to stocks. Pig iron producers have followed to a most undesirable extent the policy so long an incubus on the copper industry.

The pig iron market is settling further into dullness. Buying has not stopped, but consumers are less inclined to contract, while sellers must offer special inducements to get business. Foundry operations are slowing down, and while here and there iron is being bought for the first half, such transactions are the exception, while inquiry for the second half is much rarer. Southern iron is sold at $11 for first quarter and first half, and $10.75, Birmingham, is reported to have been touched for spot iron.

One sale of 5000 tons of basic iron from the Valleys has been made to a Chicago district steel works, and low prices are reported on sales of Valley basic to Western steel foundries. At St. Louis a 10,000-ton sale of Southern basic was made to a steel foundry.

Further slackening of steel works and rolling mill operations has resulted from a falling off both in specifications and new orders, and an increasing number of mills are working at 50 per cent. of capacity.

Structural steel is just now the most promising line. At Chicago, with the adoption of the new building code, work will soon be begun calling for 50,000 tons

of steel, including 10,000 to 12,000 tons for the Insurance Exchange Building. At Two Harbors, Minn., the new Duluth & Iron Range Railroad dock will require 9500 tons. In New York the extension of the Second and Third Avenue Elevated lines will call for 15,000 tons of rails and a large amount of structural steel.

The outlook for lake shipyards this winter has improved with the placing of three ore boats, one for the Jones & Laughlin Steel Company and two for the United States Steel Corporation. A Pittsburgh ore interest is negotiating for two vessels 615 ft. long, which will be the largest on the lakes. About 30,000 tons of plates and shapes will be needed for the five boats. The Standard Oil Company has also placed vessel contracts which will require a considerable tonnage of plates. For the new battleship, which will be built at Newport News, 12,700 tons of plates will be required, including 2200 tons of protective deck plates.

New rail orders include one of 5000 tons, taken at Chicago, and 10,500 tons for the Nashville, Chattanooga & St. Louis, to be rolled at Ensley, while the division of 20,000 tons for the Reading Railroad between the Pennsylvania Steel and Bethlehem companies is practically assured. The West Chester Railroad is in the market for 5300 tons.

Sheet prices have been yielding under closer competition. A meeting of sheet manufacturers will be held at Pittsburgh December 8.

Lake Superior iron ore shipments made a new record in the season just closed, at 42,620,000 tons, an increase of 936,000 tons over the shipments of 1909 down the lakes.

## High Quality Steel and Iron Ore Exhaustion

In all recent discussions of the question of iron ore supply the disposition has been to combat the idea that an ore famine is impending, or is even a probability one or two or three generations later. In a general way Prof. Henry M. Howe, in an article reviewed in these columns some months ago, indicated that even on the more obvious considerations which are usually given prominence, and the fact that only a small part of the earth's crust has been explored for ore, the expected life of our iron deposits has been increased from decades to centuries. He pointed out, also, what has never been given consideration in ore articles, that an incalculable amount of material which is not ore to-day will have become ore by the time the need appears.

Following closely on Professor Howe's signal contribution came the elaborate volume prepared by the Executive Committee of the Eleventh International Geological Congress, held at Stockholm, Sweden, in August. Its estimates for all the iron ore producing countries of the world, or countries in which ore is known to exist in quantity, were based on data furnished by geological surveys and by experts in mining geology. These gave a total of 22,408,000,000 tons of "actual reserves" and 123,377,000,000 tons of "potential reserves," the last item being reinforced by an estimated addition of "many thousands of millions." The impression given by this volume was that an incalculable abundance of iron ore may be counted upon, in spite of the counter effect of the editors' observation that "the supply hitherto known of actual (iron ore) resources would not be sufficient for 200 years on the supposition that the production of pig iron remained stationary"—or at about 60,000,000 tons a year for the world.

An interesting contribution to the discussion is the paper by W. H. Herdsman, of Glasgow, read recently before the West of Scotland Iron and Steel Institute, as given in *The Iron Age* of December 1. The writer considers primarily the sources of ore supply that will be open to the British steel maker in the nearer decades, but makes some suggestive comment that is of equal application to the United States and other countries. In connection with the commonly accepted exhaustion of low phosphorus iron ore deposits and the declining iron content of such ores, Mr. Herdsman points out that the drain on the acid ore resources will be relieved by the use of other metalliferous minerals. He refers to the iron-chrome-nickel ores found by hundreds of millions of tons in Greece and Cuba as likely to furnish the steel maker in part with the higher grade product which will be increasingly demanded in the near future. How far alloy steels will be a factor in modifying the rate at which iron ores are being used is a question on which definite statement is impossible. But Mr. Herdsman's suggestion is directly pertinent to the situation in the United States, in view of the use of iron-chrome-nickel ores by two Eastern steel companies, and of the tests of open hearth rails made from such ores, showing four times the life of Bessemer steel rails.

It need not be expected that progress in the use of higher grade steel for structural and railroad service will be rapid or revolutionary. But developments such as the coming in of the nickel-chrome iron ores of Cuba is bringing, and that signalized recently by the acquisition by one interest of the Heroult electric furnace rights for the United States, point to an increasing emphasis upon quality rather than quantity in the production of steel. The bearing this will have upon the problem of iron ore supply is well worthy of being taken into account along with the kindred considerations of rapidly growing use of ferro-concrete and the yearly increasing amount of scrap metal returning to the melting furnaces. All will have their part in modifying the geometric ratio which has been so freely used in computing the exhaustion of our stores of iron ore.

## Joint Debates at Salesmen's Meetings

The New England selling forces of the several constituent companies of the United States Steel Corporation have inaugurated a series of monthly conferences, which have proved highly beneficial to those in attendance, notably because of a system of debates dealing with trade topics of live importance. Two men are designated to present papers, taking opposite sides of such questions as that of the last meeting, "Shall a Contract Be a Contract?" Each prepares the best brief of which he is capable, drawing upon his own experiences and those of others. The result has been that, while the first of a pair of papers has seemed so convincing that no adequate reply appeared possible, at the end of the answering discourse the opinion as to the merits of the question has veered with some of the listeners. General discussion follows sharp upon the closing words of the second paper. Debate, some-

times heated, brings out the strong points and the fallacies of the arguments. A well-grounded basis of practice is established, and men are strengthened in their ability to handle their customers and thus made more valuable. Many organizations of office men, superintendents and foremen are fostered by American manufacturing companies. The formal paper or joint debate might be adopted by many of them to great advantage.

## The President and the Anti-Trust Law

A strong sentiment exists in favor of amending or repealing the Sherman anti-trust act, as in its present form it is regarded as a serious check to legitimate business. Representations to this effect have undoubtedly been made to President Taft, and his message to Congress was therefore awaited with much interest to learn what he might have to say on this subject. He has not avoided it, but discusses it as follows:

> I do not now recommend any amendment to the anti-trust law. In other words, it seems to me that the existing legislation with reference to the regulation of corporations and the restraint of their business has reached a point where we can stop for a while and witness the effect of the vigorous execution of the laws on the statute books in restraining the abuses which certainly did exist and which roused the public to demand reform. If this test develops a need for further legislation, well and good, but until then let us execute what we have. Due to the reform movements of the present decade, there has undoubtedly been a great improvement in business methods and standards. These will doubtless be made clearer by the decisions of the Supreme Court in cases pending before it.
>
> The great body of business men of this country, those who are responsible for its commercial development, now have an earnest desire to obey the law and to square their conduct of business to its requirements and limitations.
>
> I believe it to be in the interest of all the people of the country that for the time being the activities of government, in addition to enforcing the existing law, be directed toward the economy of administration and the enlargement of opportunities for foreign trade, the conservation and improvement of our agricultural lands, the building up of home industries, and the strengthening of confidence of capital in domestic investment.

This view of the situation commends itself to thoughtful men. It may not please those who were anxious to see a recommendation that the law be swept from the statute books nor those who would enjoy a fierce declaration that the law will not only be enforced to its full extent but that it ought to be made even more drastic. The President has taken what seems to be a proper position under the circumstances. The construction of the act is now before the Supreme Court and at no distant day the country will know precisely what bearing it has on important interests and how far it goes in affecting a much wider range of business activity. Meanwhile, it is well to wait. The language used by the President in reference to this matter is temperate, judicial and calculated to promote confidence in his wisdom.

## Canadian Tariff Agitation

The agitation for lower duties in Canada is becoming more pronounced. A representative body of farmers in the vicinity of Goderich, Ontario, met in that town some days ago and passed a resolution in favor of tariff reduction, naming farm implements, cement, harness, wire, cotton, woolens and clothing in general. On December 16 a Western farmers' deputation, 1000 strong, will visit Ottawa to petition for a lowering of the duties on agricultural implements and other articles. The Canadian agriculturists appear to be especially insistent on the reduction of prices on the manufactured articles which they consume. They have not abated from the position they took in the summer when Premier Laurier made his tour through Northwest Canada.

## Courtesy in Correspondence

Recently a large foreign dealer, requiring what would ordinarily be designated as a "big lot of machinery," wrote for prices to various manufacturers. A reply from an American firm read about as follows: "Yours at hand. State exactly what you want and we will see if we can meet your requirements. Yours, &c." This letter was merely glanced at and then thrown aside. Another letter, received from a French maker, was a lengthy communication, with the customary complimentary introduction and expressions of appreciation for having been called upon for goods by the honored correspondent. The letter went quite fully into the details and merits of various products and closed with assurances of the highest consideration. The dealer read this letter twice and then issued the order, "Buy all our machinery of that firm." No investigation was entered into as to the comparative merits of the products of the two manufacturers. One letter had produced a favorable impression and the resulting conclusion that the firm could not act otherwise than honorable, while the other letter provoked the feeling that the writer's firm was composed of barbarians, who did not even know how to write politely.

American correspondence is becoming more and more condensed. Brevity in business letter writing is constantly aimed at, and so well is this understood in our own country that those handling large correspondence favor letters written in the fewest lines. It saves the time of the recipient in reading as well as the time of the sender. Foreigners, however, are accustomed to indulge in much polite verbiage in business letters, and an American in corresponding with foreign buyers will find, as in the case cited, that a few introductory and closing courteous lines are not a profitless waste of good English but are often potent in conjuring up profitable business. As Lucullus had it, "a kind word is better than a fat pie," and an introduction creating a favorable impression at the onset is one of the best foundations for future agreeable business relations.

## October a Good Month for Exports

Our foreign trade in October was very heavy. The total exports attained a value of $207,713,086, while the imports aggregated $124,046,150. The exports were larger than in October of last year, and the imports were smaller. The gain in exports was largely due to a heavier outward movement of manufactured goods. This is gratifying, in view of the rather caustic criticisms which are so frequently made of our faulty methods in cultivating the export trade in manufactured products. When such exports reach a total of $45,748,873 in one month, as they did in October, there would seem to be some energy and intelligence applied to the cultivation of foreign markets by American manufacturers. Another feature of the October movement was the heavy balance in favor of this country, the excess of exports over imports amounting to $83,-

666,936. Thus has the unsatisfactory condition of our foreign trade, as shown in the summer months, corrected itself. It is to be hoped that this condition of affairs will continue. The business and financial interests of this country have enough adverse influences to contend with at this time without the additional unpleasant experience of piling up indebtedness abroad. Financial ease is much more certain if the international trade balance is in our favor.

## A Blow at Usurious Loans to Workmen

The Supreme Court of Massachusetts has handed down a decision declaring constitutional the law which requires that a license be secured from the local authorities if a person is to engage in the business of making loans of $200 or less at a rate of more than 12 per cent. per annum interest. Every employer of labor must welcome governmental control of a form of usury which has many annoyances for those who disburse wages. The act in question has been bitterly fought by the makers of such loans, for it is a serious blow to the practice. Local governments are given the right to regulate the maximum interest which can be collected, and the penalty of the violation of these regulations is the loss of the license. Any regulation of a practice which has compelled many manufacturers to post notices making an assignment of wages sufficient cause for immediate dismissal should be copied generally by other States. The constitutions and statutes of the several commonwealths are sufficiently similar to make the Massachusetts decision applicable to the country as a whole, where like statutes are in force.

# Correspondence

## How Business Depression Should Be Met

*To the Editor:* Events which have since occurred indicate to me a gradually increasing acceptance by the financial, mercantile and manufacturing public of J. J. Hill's opinion that we are in for a prolonged period of diminished business activity, and what such experiences have in the past entailed in the way of enforced economies most of us know, though it is possible that some of us who went through the 1893 depression have forgotten. Long before the end of the impending period of diminished business activity is reached the significance of the concluding paragraph of your financial review in your issue of November 24 will be realized by all hands; at present, however, quite a number of business men recognize the potentialities inherent in the situation pointed out by President Hepburn; but they delude themselves, in my opinion, with the idea that "this storm won't last long."

THE CAUSE OF DIMINISHING ACTIVITY.

Men of this class seem to me to shut their eyes to the fact so often pointed out by J. J. Hill during the last several years, and emphasized in his utterances of November 27—*i. e.*, that the cause of the impending readjustment of prices, values, &c., is our persistence in flying in the face of nature's laws for a long time. He has repeatedly warned us that the loss of efficiency evidenced by our decreased output per capita, accompanied by steadily rising prices and entailing an ever increasing cost of living, could not go on forever, and that it would automatically bring about a cure.

Under the old dispensation—that is, during the era of the unrestrained and in effect ignorant application of the individualistic principle—the first remedy to be resorted to would have been a reduction in the wage rate; indeed, the financial writer for the *Sun* seems to think that this remedy should be applied now; that it should precede all others. But this remedy is not of such easy application as was formerly the case. The labor unions are a fact to be taken into consideration. They uniformly evince a decided distaste to this particular form of remedy for the ills of the body politic. In view of their attitude, the fact must be faced that reduction of the wage rate as a cure will be the last remedy, not the first, to be applied.

OTHER REMEDIES THAN WAGE CUTTING.

Luckily we are not without other remedies applicable as "first aid to the injured," as I shall attempt to show further on. The world has progressed since 1893 in respect of its knowledge of the evil effects of the unrestrained application of the individualistic principle. The word "progressive" does not necessarily mean a socialist at that; it may mean a paternalist in the sense that it is the Christian duty of the intelligent man to educate or protect his less fortunate brother; and nowhere are real education and sympathy more needed than with labor unions. Nowhere are larger dividends obtainable by the application of these two remedies in the shape of increased output and industrial peace than from labor unions. Labor unions have come to stay, and should be cultivated (educated).

But if there be any of your readers who believe that they are the root of all industrial evil; that they should be smitten hip and thigh, and that consequently cutting the wage rate should be the first remedy to be applied in order to restore the patient to a normal condition, I would ask them to pause and consider some facts which they may not be aware of; or, if aware of them, which they may not understand the logical effect of, but with which, however, every broad-gauge employer of labor is conversant. One of these facts is that the most fallacious principle which labor unions attempt to apply has been, in effect, taught them by their employers; by the very people to whose care they were in natural order of things entitled to look.

A FLAT RATE OF WAGES AN ERROR.

I refer to their refusal to "grade" their men; which takes the form of a flat rate for all their members in total disregard of the fact that all men are not equal; to their thus premiumizing inefficiency. And this is about as serious a charge as can be laid against any one, but especially against organizations whose "*leitmotif*" is supposed to be the "elevation of labor." In your issue of October 13, 1910, you commented upon and reproved the practice of employers who cut price rates so soon as a man's efficiency has resulted in his earning more than the "flat rate" which they thought ought to be the limit of a man's wages. This practice is the father of the labor unions' idea of not grading their members.

The first employer who started this vicious practice and all employers who have copied him have thereby penalized efficiency; have shown their men that it did not pay to be efficient—at least, not with a boss who practiced an ignorant trick like this. Now if the employer, who is supposedly the most intelligent man around a factory, is ignorant enough to fly in the face of nature by penalizing efficiency, is he at least not debarred from inveighing against the man or organization ignorant enough to fly in the face of nature by premiumizing efficiency? And there you have the case in a nutshell of the average employer versus the average labor union. There are exceptions in both classes, but, by and large, the majority in each class comes under that heading. And it is these ignoramuses who are responsible for most of the trouble. As above said, I hold the employing class as most responsible, because they should know better.

In expressing the foregoing opinions I am not ignorant of the many injustices practiced by labor unions against employers, and quite often to their own detriment. Perhaps if the new methods had not placed such a wide gulf between employer and employed, or perhaps if those over the men more often had a disposition and ability to talk to their men in explanation of what is to the latter incomprehensible with their limited knowledge, strikes would be less frequent. I know that has been my experience, and I have been an employer of labor in a modest

way practically all my life; and never had a suspicion of the shadow of a strike.

GRADING OF MEN CAN BE DONE.

But if labor unions do refuse to grade their men that constitutes no reason why intelligent employers should not grade them. It has been done in many shops—union shops, I mean. It can be done in almost any shop in which the employer is intelligent enough to apply efficiency methods, or even thoroughly intelligent piece work methods; but the confidence of the men in the boss not being afflicted with the flat rate microbe is a *sine qua non*. The locomotive engineers' union is a standing monument to the fact that not all labor unions are ignorant enough to attempt to set nature's laws at defiance. Locomotive engineers are graded, in effect, and by their union at that. This is the kind of union welcomed by intelligent employers. I am told that the railroads would fight for it any time, and that they bonus efficiency besides—that is, they regrade their engineers and no objection by the union.

I think that too little thought is given to the influence of example in some of the things our large corporations do, and especially is this the case in respect to some of our so-called legislation in favor of labor. Take, for instance, the laws which make the eight-hour day obligatory on all contractors on public work in this State; how any real friend of labor, or how any real friend of the class upon whom labor depends for employment could help such legislation along is more than I can understand. Of course, this law adds 25 per cent., or, at least, 15 per cent., to the cost of all contracts at once; what this means on only three contracts is readily decipherable. I refer to the $50,000,000 worth of good road contracts, the $100,000,000 Erie Canal contracts and the New York subway contracts now about to be placed.

Outside of this is the effect of such legislation upon the efficiency shown in private contracts. Theoretically a man when working for a contractor on private work will increase his output at least pro rata as the increased hours on such work are to the hours on public works; as a matter of fact, he does nothing of the kind. The effect of such legislation is practically to establish an eight-hour day all around. And that I am not alone in this view is evidenced by the attitude taken by the German Government when a petition was presented to it to shorten hours on some public work; the answer was, in effect, that it would be both economically unwise as well as morally unjust for the Government to use general assets to demoralize private activities.

LABOR PAYS FOR RESTRICTIVE LEGISLATION.

Of course, labor pays for this sort of thing, even if it doesn't know it; it shows up in rent and other items going to make up the increased cost of living. And if any one should set the public, its citizens, a good example, surely it is their government, and next in order of importance its largest business interests—the railroads. Co-operation with business, by repealing some of this indefensible legislation, would be a boon just now. To-day's *Times* says the eight-hour law is affecting the battleship contractors. When coddling labor unions results in affecting the nation's safety it is nearly time to throw in the reversing lever. The socialist, Briand, who heads the French Cabinet, refused to stand for that sort of thing, and he was upheld. Have we no Briand anywhere in authority? Surely a better time than right now in which to get matters back upon a sound, economic basis could not be expected. Very truly yours,

MAX H. C. BROMBACHER.

NEW YORK, December 5, 1910.

## Possibilities in Railroad Economies

*To the Editor:* I notice with interest what you say in the current issue of your paper in relation to economy on railroads. While I have made no calculations and gathered no data, I think the statement as to the amount of savings which could be made is not at all exaggerated. I have had a rather large experience in the designing and making of parts for cars, and numberless instances could be given in which a saving could be made. And these points of saving as a rule are cumulative. I have no hesitancy in saying that there are thousands of instances in which differences of design are absolute foolishness. Any one conversant with car construction could point this out on every hand.

We have heard a good deal about standardizing among the railroad people, but let me say that this is practically all nonsense. I could almost number on my fingers the articles in freight car construction which are standard. And this applies not only as between different roads, but to the equipment on single railroads. I have in mind one road which is overcoming this trouble so far as it is concerned, but taken in general the thing is simply ridiculous, and no well-conducted individual business establishment would ever think of such a conglomeration of tweedledee and tweedledum as exists on our steam railroads. And the possibility for savings here is only one among many. JAS. H. BAKER.

PITTSBURGH, PA., December 2, 1910.

**Coal Washing and Drying at Sydney, Nova Scotia.**—Several English companies and two American companies have made offers to the Dominion Steel Corporation, Sydney, Nova Scotia, for the installing of the plant to wash the entire slack coal output of the corporation's mines. The coal washing plant which the corporation now has at work was built by Heyl & Patterson, Pittsburgh. The now projected plant will cost about $200,000. The corporation will not award the contract until it has concluded some experiments it is now conducting at Sydney with a coal drier. If the experimental plant works out as it is expected to do the water contents in the washed coal will be reduced to 5 per cent. or less, and certain impurities will be eliminated to the great improvement of the coal for the purpose of coking.

**Pennsylvania Corporation Figures.**—The close of the fiscal year of the State of Pennsylvania shows an interesting condition in the incorporation of new companies. Several hundred were chartered and over 250 companies increased their capital. The receipts from bonus on charter capital and subsequent increases aggregated $1,151,092.15, which is one-third of one per cent. of the capital authorized. This item of revenue was $634,826.60 greater than the same source of income in 1909 and means that over $200,000,000 more was invested in new corporations in Pennsylvania in 1910 than in the year before. The increase of capital was general, although a number of iron and steel concerns were heavy contributors to the total.

**The Foreign Rail Trade.**—An increase in rail inquiries is noted by the London *Ironmonger* which says that the business in prospect includes 11,000 tons for the East Indian Railway, 6500 tons for the Bombay & Baroda Railway and 4500 tons for the Bengal & North Western Railway. There are some vague inquiries about also, one being for 10,000 tons for Servia, but this is hardly likely to come to British works. The Belgian State Railways have placed orders for 30,000 tons of rails and accessories with Belgian works. A New South Wales inquiry amounts to 8000 tons and a like tonnage is asked for by the Great Indian Peninsula Railway.

Birmingham, Ala., advices state that Douglas H. Gordon of the Baltimore Trust Company, and Joshua Levering, also of Baltimore, have been elected directors of the Alabama Consolidated Coal & Iron Company for the ensuing year. This company was at one time controlled by Baltimore interests, and the election of these directors tends to the belief that Baltimore people are again becoming largely interested in it.

# Pig Iron Production

## The Decline Proceeding More Rapidly

### The November Rate Nearly 4000 Tons a Day Less Than That of October

The statistics of pig iron production show an accelerating rate of decrease. In November (30 days) the output of coke and anthracite iron was 1,909,780 gross tons, or 63,659 tons a day, against 2,093,121 tons in October (31 days), or 67,520 tons a day. Steel works furnaces made all the curtailment of last month. In fact, the merchant furnaces showed about 500 tons a day increase over their October rate, and this with a decreasing number of furnaces. In recent months there have been unusual fluctuations of output in the same furnace due to the alterations of slower and faster driving and to occasional bankings. The net loss in the number of active furnaces between November 1 and December 1 was 13, to which the steel works furnaces contributed 7 and the merchant furnaces 6, though, as is well known, the capacity represented by the 7 is much greater than that of the 6.

The daily capacity of the 217 coke and anthracite furnaces active December 1 was 61,279 tons, which compares with 65,826 tons a day for 230 furnaces on November 1. Estimating charcoal iron, the production of pig iron at the beginning of December was at the rate of about 22,750,000 tons a year, or 1,600,000 tons a year less than on November 1.

#### Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, beginning with 1909, is as follows:

*Daily Rate of Pig Iron Production by Months.—Gross Tons.*

| | Steel works. | Merchant. | Total. |
|---|---|---|---|
| November, 1909 | 56,333 | 28,584 | 84,917 |
| December | 57,058 | 27,964 | 85,022 |
| January, 1910 | 57,200 | 26,948 | 84,148 |
| February | 57,876 | 27,740 | 85,616 |
| March | 56,113 | 28,346 | 84,459 |
| April | 55,663 | 27,129 | 82,792 |
| May | 52,235 | 24,867 | 77,102 |
| June | 51,637 | 23,879 | 75,516 |
| July | 47,183 | 22,122 | 69,305 |
| August | 46,534 | 21,429 | 67,963 |
| September | 47,007 | 21,536 | 68,542 |
| October | 45,794 | 21,726 | 67,520 |
| November | 41,427 | 22,232 | 63,659 |

#### November Output by Districts

The table below gives the production of all coke and anthracite furnaces in November and the four months preceding:

*Monthly Pig Iron Production.—Gross Tons.*

| | July. (31 days) | August. (31 days) | Sept. (30 days) | Oct. (31 days) | Nov. (30 days) |
|---|---|---|---|---|---|
| New York | 162,901 | 158,666 | 148,990 | 147,894 | 142,610 |
| New Jersey | 18,962 | 19,177 | 18,773 | 19,115 | 18,284 |
| Lehigh Valley | 61,014 | 63,878 | 63,919 | 69,327 | 62,161 |
| Schuylkill Val. | 61,340 | 64,926 | 60,689 | 61,673 | 54,642 |
| Lower Susquehanna and Lebanon Val. | 60,043 | 54,442 | 53,750 | 54,072 | 50,370 |
| Pittsburgh dis. | 502,711 | 510,352 | 505,342 | 507,508 | 445,083 |
| Shenango Val. | 113,280 | 113,500 | 108,114 | 112,026 | 82,904 |
| West. Penn. | 129,786 | 116,117 | 115,622 | 126,098 | 87,568 |
| Md., Va. and Kentucky | 75,051 | 76,477 | 68,398 | 67,926 | 58,772 |
| Wheeling dis. | 73,164 | 68,341 | 74,143 | 76,581 | 84,390 |
| Mahoning Val. | 215,282 | 211,575 | 201,986 | 202,667 | 180,717 |
| Central and North. Ohio. | 139,627 | 122,960 | 111,958 | 117,902 | 108,599 |
| Hocking Valley, Hanging Rock and S.W.Ohio. | 30,163 | 32,490 | 27,657 | 24,029 | 25,008 |
| Mich.,Minn.,Mo., Wis.,Col.,Wash. | 65,863 | 66,096 | 63,935 | 72,825 | 78,927 |
| Chicago dis. | 264,136 | 258,145 | 259,672 | 246,504 | 239,469 |
| Alabama | 143,313 | 140,015 | 148,755 | 160,077 | 165,512 |
| Tenn., Georgia and Texas | 31,806 | 29,690 | 24,563 | 26,897 | 24,764 |
| Totals | 2,148,442 | 2,106,847 | 2,056,275 | 2,093,121 | 1,909,780 |

The net decrease in the number of active furnaces between November 1 and December 1 was 13. The list of furnaces blown out includes one Niagara in the Buffalo district, Musconetcong in New Jersey, one Saucon in the Lehigh Valley, one Swede in the Schuylkill Valley, one Duquesne, two Edgar Thomson and one Isabella in the Pittsburgh district, New Castle No. 4 in the Shenango Valley, one Cambria and Josephine in western Pennsylvania, Princess in Virginia, one Bellaire in the Wheeling district, two Ohio in the Mahoning Valley, one Joliet in Illinois, Alice and one Ensley in Alabama, Napier and Silver Creek in Georgia.

Among furnaces blown in last month were one Paxton in the Lower Susquehanna Valley, Martin's Ferry in the Wheeling district, Hamilton in the Hanging Rock district, one Gary in Indiana, one Colorado and Citico in Tennessee.

#### Capacity in Blast December 1 and November 1

The following table shows the daily capacity of furnaces in blast December 1 and November 1. These figures are based largely on the performance of the furnaces in the past two months:

*Coke and Anthracite Furnaces in Blast and Capacity.—Gross Tons.*

| Location of furnaces. | Total number of stacks. | December 1. Number in blast. | December 1. Capacity per day. | November 1. Number in blast. | November 1. Capacity per day. |
|---|---|---|---|---|---|
| New York: | | | | | |
| Buffalo | 17 | 12 | 4,067 | 13 | 4,135 |
| Other New York | 7 | 3 | 565 | 3 | 550 |
| New Jersey | 7 | 2 | 508 | 2 | 432 |
| Spiegel | 2 | .. | .... | .. | .... |
| Pennsylvania: | | | | | |
| Lehigh Valley | 23 | 11 | 1,942 | 12 | 2,076 |
| Spiegel | 3 | 1 | 81 | 1 | 90 |
| Schuylkill Valley | 16 | 6 | 1,762 | 7 | 2,010 |
| Low. Susquehanna | 7 | 5 | 861 | 4 | 802 |
| Lebanon Valley | 10 | 6 | 820 | 6 | 847 |
| Pittsburgh district | 50 | 34 | 13,686 | 38 | 15,483 |
| Spiegel | 3 | 1 | 120 | 1 | 114 |
| Shenango Valley | 20 | 9 | 2,623 | 10 | 3,226 |
| Western Penn | 27 | 12 | 2,769 | 14 | 3,295 |
| Maryland | 4 | 3 | 710 | 3 | 805 |
| Wheeling district | 14 | 7 | 2,675 | 7 | 2,420 |
| Ohio: | | | | | |
| Mahoning Valley | 23 | 16 | 5,765 | 18 | 6,837 |
| Central and North. | 22 | 10 | 3,620 | 10 | 3,803 |
| Hocking Val., Hanging Rock and S. W. Ohio. | 15 | 8 | 984 | 7 | 775 |
| Illinois and Indiana | 31 | 19 | 7,705 | 20 | 8,050 |
| Spiegel | 3 | 1 | 100 | 0 | 0 |
| Michigan, Wisconsin and Minnesota | 10 | 7 | 1,476 | 7 | 1,340 |
| Colorado, Missouri and Washington | 7 | 5 | 1,285 | 4 | 1,100 |
| The South: | | | | | |
| Virginia | 23 | 8 | 879 | 9 | 1,140 |
| Kentucky | 5 | 2 | 344 | 2 | 348 |
| Alabama | 46 | 21 | 5,096 | 23 | 5,274 |
| Tenn. and Georgia | 20 | 8 | 896 | 9 | 874 |
| Totals | 415 | 217 | 61,279 | 230 | 65,826 |

#### Production of Steel Companies

Returns from all plants of the United States Steel Corporation and the various independent steel companies show the following totals of product month by month. Only steel-making iron is included in these figures, together with ferromanganese, spiegeleisen and ferrosilicon. These last, while stated separately, are also included in the columns of "total production."

*Production of Steel Companies.—Gross Tons.*

| | Pig.—Total production. 1908. | 1909. | 1910. | Spiegeleisen and ferromanganese. 1909. | 1910. |
|---|---|---|---|---|---|
| January | 664,415 | 1,117,823 | 1,773,201 | 12,325 | 19,538 |
| February | 745,802 | 1,073,363 | 1,620,539 | 10,046 | 21,396 |
| March | 841,502 | 1,140,553 | 1,739,212 | 23,743 | 25,591 |
| April | 725,548 | 1,093,092 | 1,669,808 | 22,478 | 22,304 |
| May | 759,674 | 1,256,448 | 1,619,283 | 20,834 | 26,529 |
| June | 717,689 | 1,285,527 | 1,549,112 | 16,516 | 27,680 |
| July | 798,639 | 1,508,762 | 1,462,689 | 17,613 | 22,924 |
| August | 807,052 | 1,591,991 | 1,442,572 | 22,313 | 25,776 |
| September | 933,514 | 1,660,839 | 1,410,221 | 28,148 | 15,151 |
| October | 996,481 | 1,769,094 | 1,419,624 | 25,384 | 8,500 |
| November | 981,167 | 1,689,494 | 1,242,804 | 23,376 | 9,032 |
| December | 1,090,339 | 1,768,799 | ..... | 20,791 | ..... |

#### Graphic Chart of Pig Iron Production and Prices

The fluctuations in pig iron production from January, 1907, to the present time are shown in the accompanying chart. The figures represented by the heavy line are those of daily average production, by months, of coke and anthracite iron. The two other curves on the chart represent monthly average prices of Southern No. 2 foundry pig iron at Cincinnati and of local No. 2 foundry iron delivered at Chicago. They are based on the weekly market quotations of *The Iron Age*. The two sets of figures are as follows:

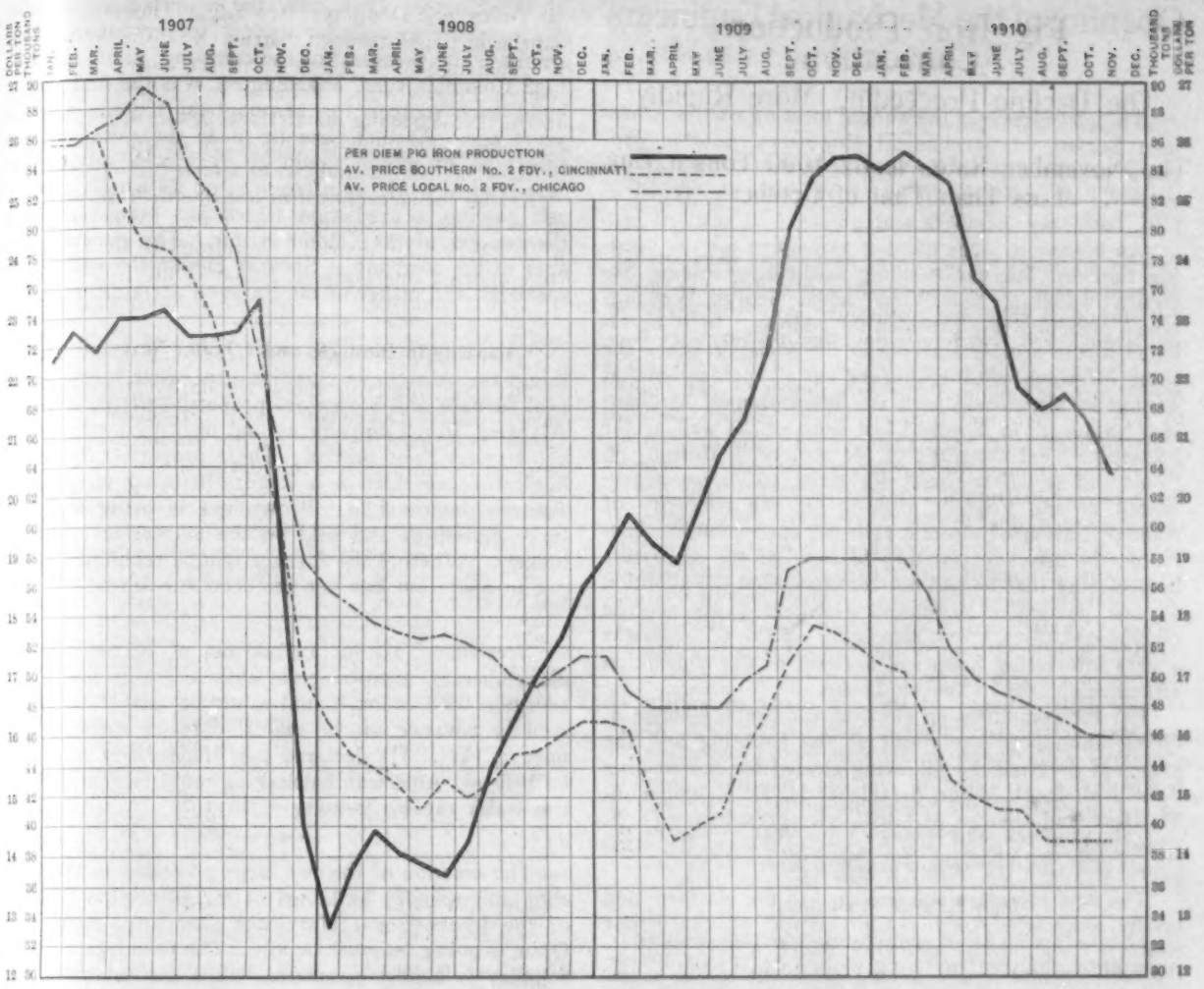


Diagram of Daily Average Production by Months of Coke and Anthracite Pig Iron in the United States from January 1, 1907, to December 1, 1910; Also of Monthly Average Prices of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry Iron Delivered at Chicago.

*Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907.—Gross Tons.*

| | 1907. | 1908. | 1909. | 1910. |
|---|---|---|---|---|
| January | 71,149 | 33,718 | 57,975 | 84,148 |
| February | 73,038 | 37,163 | 60,970 | 85,616 |
| March | 71,821 | 39,619 | 59,232 | 84,459 |
| April | 73,885 | 38,289 | 57,962 | 82,792 |
| May | 74,048 | 37,603 | 60,753 | 77,102 |
| June | 74,486 | 36,444 | 64,656 | 75,516 |
| July | 72,763 | 39,287 | 67,793 | 69,305 |
| August | 72,594 | 43,851 | 72,546 | 67,963 |
| September | 72,783 | 47,300 | 79,507 | 68,476 |
| October | 75,380 | 50,554 | 83,856 | 67,520 |
| November | 60,937 | 52,595 | 84,917 | 63,659 |
| December | 39,815 | 56,158 | 85,022 | ..... |

*Monthly Average Prices in Dollars of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry at Chicago Since January, 1907.*

| | 1907. | | 1908. | | 1909. | | 1910. | |
|---|---|---|---|---|---|---|---|---|
| | Sou. No. 2 Cin. | Loc. No. 2 Chi. | Sou. No. 2 Cin. | Loc. No. 2 Chi. | Sou. No. 2 Cin. | Loc. No. 2 Chi. | Sou. No. 2 Cin. | Loc. No. 2 Chi. |
| Jan. | 26.00 | 25.85 | 16.15 | 18.45 | 16.25 | 17.35 | 17.25 | 19.00 |
| Feb. | 26.00 | 25.85 | 15.75 | 18.16 | 16.13 | 16.75 | 17.06 | 19.00 |
| March | 26.00 | 26.10 | 15.50 | 17.85 | 15.05 | 16.50 | 16.30 | 18.30 |
| April | 25.06 | 26.35 | 15.20 | 17.73 | 14.25 | 16.50 | 15.37 | 17.50 |
| May | 24.25 | 26.85 | 14.75 | 17.63 | 14.50 | 16.50 | 15.00 | 17.06 |
| June | 24.10 | 26.60 | 15.25 | 17.73 | 14.70 | 16.50 | 14.85 | 16.75 |
| July | 23.85 | 25.55 | 15.00 | 17.55 | 15.75 | 17.00 | 14.75 | 16.56 |
| Aug. | 23.00 | 24.85 | 15.25 | 17.35 | 16.38 | 17.13 | 14.31 | 16.50 |
| Sept. | 21.50 | 24.10 | 15.65 | 17.05 | 17.35 | 18.70 | 14.25 | 16.40 |
| Oct. | 20.95 | 22.45 | 15.75 | 16.85 | 17.88 | 19.00 | 14.25 | 16.06 |
| Nov. | 19.50 | 20.66 | 16.00 | 17.10 | 17.75 | 19.00 | 14.25 | 16.00 |
| Dec. | 17.00 | 18.80 | 16.25 | 17.35 | 17.45 | 19.00 | .... | .... |

## The Record of Production

*Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907.—Gross Tons.*

| | 1907. | 1908. | 1909. | 1910. |
|---|---|---|---|---|
| January | 2,205,607 | 1,045,250 | 1,797,560 | 2,608,605 |
| February | 2,045,068 | 1,077,740 | 1,707,340 | 2,397,254 |
| March | 2,228,457 | 1,228,204 | 1,832,194 | 2,617,949 |
| April | 2,216,558 | 1,149,602 | 1,738,877 | 2,483,763 |
| May | 2,295,505 | 1,165,688 | 1,883,330 | 2,390,180 |
| June | 2,234,575 | 1,092,131 | 1,930,866 | 2,265,478 |
| July | 2,255,660 | 1,218,129 | 2,103,431 | 2,148,442 |
| August | 2,250,410 | 1,359,831 | 2,248,930 | 2,106,847 |
| September | 2,183,487 | 1,418,998 | 2,385,206 | 2,056,275 |
| October | 2,336,972 | 1,567,198 | 2,599,541 | 2,093,121 |
| November | 1,828,125 | 1,577,854 | 2,547,508 | 1,909,780 |
| December | 1,234,279 | 1,740,912 | 2,635,680 | ..... |

**A Structural Fabricating Plant at Denver.**—The Lowith Brothers Iron Works Company, Denver, Colo., has plans prepared for the erection of shops for the fabrication of structural iron and steel. The company has heretofore purchased its material from Eastern interests already fabricated, but owing to the increased demand for steel construction in Denver and surrounding territory, it is the belief of the company that the city will finally be an important center for the manufacture of this material. A complaint is now pending before the Interstate Commerce Commission to bring about a reduction in freight rates into Denver from the East on plain material. At present the rate on plain material is the same as that on fabricated steel, and as a result the material has been purchased in the East already fabricated and shipped ready for erection.

The Joliet Rolling Mill Company, recently incorporated with $150,000 capital, takes over the Joliet Iron Products Company. Among the Incorporators are Israel Joseph, Adam S. Clow, Adam Groth, A. B. Scully and C. E. Woodruff. Mr. Joseph has been elected president and Mr. Groth, who had been president of the Joliet Iron Products Company, is treasurer. The product is bar iron and small shapes, the capacity being about 25,000 tons a year.

The application to the United States Court, Philadelphia, Pa., for the appointment of a receiver to secure creditors of L. & R. Wister & Co., iron merchants, pending the adjudicating of bankruptcy proceedings, reported in *The Iron Age*, of November 24, was refused by the court. No further progress is reported in the bankruptcy matters at this time.

# Opening of the Mechanical Engineers' Convention

The attendance at the annual meeting of the American Society of Mechanical Engineers, now in progress, promises to be the largest in the history of the society. At the time of going to press the registration, including members and guests, had reached 660.

An unusually large number assembled for the opening function Tuesday evening, in the Engineering Societies Building, New York, when George Westinghouse presented his presidential address. In it he alluded to the principal events in the society's year—the joint meetings with engineers of all professions at Boston in March and with the Institution of Mechanical Engineers in England last summer, as well as the important local meetings of the society in Boston, St. Louis and San Francisco. Reverting to his paper presented at the English meeting on the necessity of standardization of electric railroad equipment, he corrected the misunderstanding of some of the discussers by declaring that he had not recommended the adoption of one particular system, and repeated his specific recommendations. The remainder of the address was a very interesting historical account of the conception and development of the air brake.

For the committee on election of officers, George A. Orrok announced the result of the balloting and the president declared the following elected for the ensuing year: Col. E. D. Meier, president; H. H. Vaughan, E. M. Herr and George M. Brill, vice-presidents; D. F. Crawford, E. B. Katte and Stanley G. Flagg, Jr., managers, and Wm. H. Wiley, treasurer.

The new president was escorted to the platform and briefly acknowledged his appreciation of the honor conferred upon him, following which a reception by the retiring and newly elected president to the members and guests was held in the society's rooms.

Wednesday morning the usual matters of business were dispensed with. Secretary Rice announced the election during the year of 135 members, 15 associate members and 126 junior members, and 28 promotions to member's grade. A report for the committee having in charge the raising of funds to meet the society's share in the purchase of the land occupied by the Engineering Societies Building was presented by Worcester R. Warner. There remains less than $90,000 to be subscribed.

Reports on the meeting in England were presented by Honorary Secretary F. R. Hutton and Secretary Calvin W. Rice and the first professional paper "The Transmission of Heat in Surface Condensation" was presented in abstract by the author, George A. Orrok. A report of the discussion of the paper will be included in the main report of the meeting in our next issue.

**The Connecticut Valley Metal Trades Association.**—At the recent annual meeting of the Connecticut Valley Metal Trades Association, held at Springfield, Mass., these officers were elected: President, F. C. Breakspear, A. G. Spalding & Bros. Mfg. Company, Chicopee, Mass.; vice-president, C. P. Fay, J. Stevens Arms & Tool Company, Chicopee Falls, Mass.; secretary, A. E. Smith, Knox Automobile Company, Springfield, Mass.; treasurer, Springfield National Bank. Executive Committee: R. D. Reed, H. B. Smith Company, Westfield, Mass.; F. C. Feiker, Northampton Cutlery Company, Northampton, Mass.; A. J. Tucker, Cheney Bigelow Wire Works, Springfield, Mass.; George Braithwaite, Stevens-Duryea Company, Chicopee Falls, Mass.; T. J. Rider, Rider-Bagg Company, Springfield, Mass.

The Gyro Motor Company, recently incorporated with a capital stock of $100,000, is building a factory at Washington, D. C., for the manufacture of high-grade revolving cylinder motors for aeronautical machines. The president of the company, Emile Berliner, 1438 Columbia road, Washington, was the first man to build such motors for aeronautical experiments five years ago. At that time he made the statement that this type of motor would be very well adapted for aeronautical work, as it required no fly wheels and was self cooling, a prediction which has been verified by the success of the Gnome motor. The general manager of the company is Spencer Heath, the well-known specialist and maker of the Paragon aerial propellers.

Geo. B. McCormack and Erskine Ramsay of Birmingham, Ala., have closed a deal whereby the charcoal furnace and brown ore properties of the Georgia-Alabama Iron Company at and near Cedartown, Ga., come under their control. These properties have been heretofore operated as a Rogers-Brown interest. The furnace is now idle. Brown ore is being mined in large quantities and sold on the market to coke iron makers. Whether the furnace will be rehabilitated and put in operation has not yet been announced.

President Taft, in an address at Richmond, Va., November 23, aroused great enthusiasm by his prediction that the Panama Canal would be open to the world well in advance of the official date of opening, January 1, 1915. He declared that if necessity demanded he believed American battleships could be sent through the waterway by January 1, 1913.

The erection of the two large additions to the forge shop and foundry buildings of the Champion Division of the International Harvester Company, Springfield, Ohio, is going forward rapidly. The foundation for the foundry is almost completed, while the superstructure of the forge plant is now being erected.

The business men of Middletown, Ind., have organized the Middletown Commercial Club, the principal object of which will be to induce factories to locate in that city. B. R. Inman is president; F. H. Hagenbuch, vice president; C. C. Druly, secretary and Adolph Cooper, treasurer.

The Laramie Rolling Mill of the Union Pacific Railroad at Laramie, Wyoming, which was seriously damaged by fire, may not be rebuilt. It has not been profitable. There were five heating furnaces, one puddling furnace, a 10-in. and a 19-in. train and machines for manufacturing spikes, rivets and bolts, the capacity being 20,000 tons a year.

The George B. Lessig Company, Pottstown, Pa., has resumed operations in its puddle mills, plate mill and nail factory, with every prospect of continuing during the first half of 1911. The puddle mill has been operated about one month since July 1, while the other departments have been operating about two-thirds of the time.

It is stated by the Struthers-Wells Company, Warren, Pa., whose Pittsburgh branch office is located in the House Building, that it has put in successful, continuous operation upward of 75,000 hp. in gas engines, both horizontal and vertical types, of its manufacture. A specialty is also made of suction gas producers.

The fortnightly bulletin of the American Railway Association shows that on November 23 the net surplus of idle cars on the lines of the United States and Canada was 28,393, compared with 13,581 two weeks earlier.

# The Iron and Metal Markets

## A Comparison of Prices

**Advances Over the Previous Week in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Dec. 7, 1910. | Nov. 30, 1910. | Nov. 9, 1910. | Dec. 8, 1909. |
|---|---|---|---|---|
| **PIG IRON, Per Gross Ton:** | | | | |
| Foundry No. 2, standard, Philadelphia | $15.50 | $15.50 | $15.75 | $19.00 |
| Foundry No. 2, Southern, Cincinnati | 14.25 | 14.25 | 14.25 | 17.75 |
| Foundry No. 2, local, Chicago | 16.00 | 16.00 | 16.00 | 19.00 |
| Basic, delivered, eastern Pa. | 14.75 | 14.75 | 14.75 | 18.75 |
| Basic, Valley furnace | 13.50 | 13.50 | 13.25 | 17.00 |
| Bessemer, Pittsburgh | 15.90 | 15.90 | 15.50 | 19.90 |
| Gray forge, Pittsburgh | 13.90 | 13.90 | 14.15 | 17.40 |
| Lake Superior charcoal, Chicago | 18.00 | 18.00 | 18.00 | 19.50 |
| **BILLETS, &c., Per Gross Ton:** | | | | |
| Bessemer billets, Pittsburgh | 23.00 | 23.00 | 23.50 | 27.50 |
| Forging billets, Pittsburgh | .... | 28.50 | 28.50 | 32.00 |
| Open hearth billets, Philadelphia | 25.50 | 25.50 | 26.00 | 30.60 |
| Wire rods, Pittsburgh | 28.00 | 28.00 | 28.00 | 33.00 |
| **OLD MATERIAL, Per Gross Ton:** | | | | |
| Iron rails, Chicago | 16.00 | 16.00 | 16.00 | 20.00 |
| Iron rails, Philadelphia | 18.00 | 18.00 | 18.00 | 20.50 |
| Car wheels, Chicago | 13.50 | 13.50 | 13.50 | 18.50 |
| Car wheels, Philadelphia | 13.75 | 13.75 | 13.75 | 17.50 |
| Heavy steel scrap, Pittsburgh | *13.75* | 14.25 | 14.25 | 18.00 |
| Heavy steel scrap, Chicago | 12.25 | 12.25 | 12.25 | 16.00 |
| Heavy steel scrap, Philadelphia | *12.75* | 13.00 | 13.50 | 17.50 |
| **FINISHED IRON AND STEEL, Per Pound:** | Cents. | Cents. | Cents. | Cents. |
| Bessemer steel rails, heavy, at mill | 1.25 | 1.25 | 1.25 | 1.25 |
| Refined iron bars, Philadelphia | 1.35 | 1.35 | 1.37 | 1.65 |
| Common iron bars, Chicago | 1.35 | 1.35 | 1.35 | 1.60 |
| Common iron bars, Pittsburgh | 1.40 | 1.40 | 1.45 | 1.70 |
| Steel bars, tidewater, New York | 1.56 | 1.56 | 1.56 | 1.66 |
| Steel bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.50 |
| Tank plates, tidewater, New York | 1.56 | 1.56 | 1.56 | 1.71 |
| Tank plates, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.55 |
| Beams, tidewater, New York | 1.56 | 1.56 | 1.56 | 1.71 |
| Beams, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.55 |
| Angles, tidewater, New York | 1.56 | 1.56 | 1.56 | 1.71 |
| Angles, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.55 |
| Skelp, grooved steel, Pittsburgh | 1.25 | 1.25 | 1.25 | 1.60 |
| Skelp, sheared steel, Pittsburgh | 1.30 | 1.30 | 1.35 | 1.65 |
| **SHEETS, NAILS AND WIRE, Per Pound:** | Cents. | Cents. | Cents. | Cents. |
| Sheets, black, No. 28, Pittsburgh | *2.15* | 2.20 | 2.20 | 2.40 |
| Wire nails, Pittsburgh* | 1.70 | 1.70 | 1.70 | 1.80 |
| Cut nails, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.80 |
| Barb wire, galv., Pittsburgh* | 2.00 | 2.00 | 2.00 | 2.10 |
| **METALS, Per Pound:** | Cents. | Cents. | Cents. | Cents. |
| Lake copper, New York | 13.00 | 13.00 | 13.00 | 13.75 |
| Electrolytic copper, New York | 12.87½ | 12.87½ | 12.87½ | 13.37½ |
| Spelter, New York | 6.00 | 5.95 | 5.95 | 6.37½ |
| Spelter, St. Louis | 5.85 | 5.80 | 5.80 | 6.20 |
| Lead, New York | 4.50 | 4.50 | 4.40 | 4.40 |
| Lead, St. Louis | 4.40 | 4.40 | 4.30 | 4.30 |
| Tin, New York | 37.95 | 37.35 | 36.25 | 32.25 |
| Antimony, Hallett, New York | 7.75 | 7.75 | 7.75 | 8.12½ |
| Tin plate, 100 lb. box, New York | $3.84 | $3.84 | $3.84 | $3.84 |

* These prices are for largest lots to jobbers.

## Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought boiler tubes.

**Structural Material.**—I-beams and channels, 3 to 15 in., inclusive, 1.40c. to 1.45c., net; I-beams over 15 in., 1.50c. to 1.55c., net; H-beams over 8 in., 1.55c. to 1.60c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.40c. to 1.45c., net; angles over 6 in., 1.50c. to 1.55c., net; angles, 3 in., on one or both legs, less than ¼ in. thick, 1.45c., plus full extras as per steel bar card, effective September 1, 1909; tees, 3 in. and up, 1.40c. to 1.45c., net; zees, 3 in. and up, 1.40c. to 1.45c., net; angles, channels and tees, under 3 in., 1.45c., base, plus full extras as per steel bar card of September 1, 1909; deck beams and bulb angles, 1.70c. to 1.75c., net; hand rail tees, 2.50c.; checkered and corrugated plates, 2.50c., net.

**Plates.**—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.40c. to 1.45c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. on thinnest edge | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| Gauges under No. 9 to and including No. 10 | .35 |
| Gauges under No. 10 to and including No. 12 | .40 |
| Sketches (including all straight taper plates), 3 ft. and over in length | .10 |
| Complete circles, 3 ft. in diameter and over | .20 |
| Boiler and flange steel | .10 |
| "A. B. M. A." and ordinary firebox steel | .20 |
| Still bottom steel | .30 |
| Marine steel | .40 |
| Locomotive firebox steel | .50 |
| Widths over 100 in. up to 110 in., inclusive | .05 |
| Widths over 110 in. up to 115 in., inclusive | .10 |
| Widths over 115 in. up to 120 in., inclusive | .15 |
| Widths over 120 in. up to 125 in., inclusive | .25 |
| Widths over 125 in. up to 130 in., inclusive | .50 |
| Widths over 130 in. | 1.00 |
| Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive | .25 |
| Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive | .50 |
| Cutting to lengths or diameters under 1 ft. | 1.55 |

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

**Sheets.**—Makers' prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows: Blue annealed sheets, Nos. 3 to 8, U. S. standard gauge, 1.55c.; Nos. 9 and 10, 1.60c.; Nos. 11 and 12, 1,65c.; Nos. 13 and 14, 1.70c.; Nos. 15 and 16, 1.80c. One pass, cold rolled, box annealed sheets: Nos. 10 and 11, 1.80c.; Nos. 12 to 14, 1.85c.; Nos. 15, 16 and 17, 1.90c.; Nos. 18 to 21, 1.95c.; Nos. 22, 23 and 24, 2c.; Nos. 25 and 26, 2.10c.; Nos. 27 and 28, 2.15c.; No. 29, 2.20c.; No. 30, 2.30c. Three pass cold rolled sheets, box annealed, are as follows: Nos. 15 and 16, 2c.; Nos. 17 to 21, 2.05c.; Nos. 22 to 24, 2.10c.; Nos. 25 and 26, 2.15c.; No. 27, 2.20c.; No. 28, 2.25c. Galvanized sheets, Nos. 10 and 11, black sheet gauge, 2.15c.; Nos. 12, 13 and 14, 2.25c.; Nos. 15, 16 and 17, 2.40c.; Nos. 18, 19, 20 and 21, 2.55c.; No. 22, 2.60c.; Nos. 23 and 24, 2.65c.; Nos. 25 and 26, 2.85c.; No. 27, 3c.; No. 28, 3.15c.; No. 29, 3.25c.; No. 30, 3.45c. Painted roofing sheets, No. 28, $1.55 per square. Galvanized sheets, No. 28, $2.75 per square for 2½-in. corrugations. All above prices are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount 10 days from date of invoice.

**Wrought Pipe.**—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 1:

| | Steel Black. | Steel Galv. | Iron Black. | Iron Galv. |
|---|---|---|---|---|
| **Butt Weld.** | | | | |
| ⅛, ¼, ⅜ in. | 72 | 58 | 68 | 54 |
| ½ in. | 75 | 63 | 71 | 59 |
| ¾ to 1¼ in. | 79 | 69 | 75 | 65 |
| 2 to 3 in. | 80 | 70 | 76 | 66 |
| **Lap Weld.** | | | | |
| 2 in. | 76 | 66 | 72 | 62 |
| 2½ to 4 in. | 78 | 68 | 74 | 64 |
| 4½ to 6 in. | 77 | 67 | 73 | 63 |
| 7 to 12 in. | 75 | 59 | 71 | 55 |
| 13 to 15 in. | 51½ | .. | .. | .. |
| **Butt Weld, extra strong, plain ends, card weights.** | | | | |
| ⅛, ¼, ⅜ in. | 69 | 59 | 65 | 55 |
| ½ in. | 74 | 68 | 70 | 64 |
| ¾ to 1¼ in. | 78 | 72 | 74 | 68 |
| 2 to 3 in. | 79 | 73 | 75 | 69 |
| **Lap Weld, extra strong, plain ends, card weight.** | | | | |
| 2 in. | 75 | 69 | 71 | 65 |
| 2½ to 4 in. | 77 | 71 | 73 | 67 |
| 4½ to 6 in. | 76 | 70 | 72 | 66 |
| 7 to 8 in. | 69 | 59 | 65 | 55 |
| 9 to 12 in. | 64 | 54 | 60 | 50 |
| **Butt Weld, double extra strong, plain ends, card weight.** | | | | |
| ¼ in. | 64 | 58 | 60 | 54 |
| ¾ to 1¼ in. | 67 | 61 | 63 | 57 |
| 2 to 3 in. | 69 | 63 | 65 | 59 |
| **Lap Weld, double extra strong, plain ends, card weight.** | | | | |
| 2 in. | 65 | 59 | 61 | 55 |
| 2½ to 4 in. | 67 | 61 | 63 | 57 |
| 4½ to 6 in. | 66 | 60 | 62 | 56 |
| 7 to 8 in. | 59 | 49 | 55 | 45 |

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Plugged and Reamed.

| | | |
|---|---|---|
| 1 to 1½, 2 to 3 in. | Butt Weld | Will be sold at two (2) points lower basing (higher price) than merchant or card weight pipe, Butt or Lap Weld as specified. |
| 2, 2½ to 4 in. | Lap Weld | |

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

**Boiler Tubes.**—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

| | Steel. | Iron. |
|---|---|---|
| 1 to 1½ in. | 49 | 43 |
| 1¾ to 2¼ in. | 61 | 43 |
| 2½ in. | 63 | 48 |
| 2¾ to 3 in. | 69 | 55 |
| 6 to 13 in. | 61 | 43 |

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.
Less than carloads to destinations east of the Mississippi River will be sold at delivered discounts for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

**Wire Rods.**—Bessemer rods, $28; open hearth and chain rods, $28.50.

**Steel Rivets.**—Structural rivets, ¾ in. and larger, 1.90c., base; cone head boiler rivets, ¾ in. and larger, 2c., base; ⅝ in. and 11-16 in. take an advance of 15c., and ½ in. and 9-16 in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill.

## Pittsburgh

PARK BUILDING, December 7, 1910.—(*By Telegraph.*)

**Pig Iron.**—The pig iron market is practically lifeless, there being no inquiries of moment. The Valley furnaces continue to quote $15, at furnace, on standard Bessemer. The average price of Bessemer iron for November by one authority is given as $14.94 and basic $13.36, both at Valley furnace. Foundry iron is weaker and has sold below $13.75, at furnace. We quote standard Bessemer iron, $15; basic, $13.50; No. 2 foundry, $13.75; malleable Bessemer, $13.75, and gray forge, $13, all at Valley furnace, with a freight rate of 90c. a ton for delivery in Pittsburgh district.

**Steel.**—There is little new inquiry and prices are weak. Small independent steel plants are offering billets and sheet bars at considerably less than the larger mills are naming. Reports are that one or two odd lots of open hearth sheet bars have been sold for prompt delivery by dealers at close to $23, Pittsburgh. We quote Bessemer and open hearth billets, 4 x 4 in. and up to but not including 10 x 10 in., at $23, base, and sheet and tin bars in 30-ft. lengths, $24.50, f.o.b. Pittsburgh, full freight to destination added.

(*By Mail.*)

Conditions in the iron trade to-day are far from being satisfactory; in fact, are worse than at any time this year as regards both new orders and specifications. Since about November 1 there has been a steady decline in orders, while specifications against contracts have also shown a decided falling off. Confidence in the immediate future seems to be lacking, and consumers are placing orders with great caution. The feeling is pretty general in the trade that the present basis of prices cannot be maintained. Operations among the large steel companies are now down to about 50 per cent., and in some cases less. So far prices have held fairly well, but there is no doubt that here and there concessions are being quietly made, yet these have not had the effect of bringing out any considerable volume of business. The nominal price of Bessemer pig iron remains at $15, Valley furnace, but not enough new business is being offered to test the market. Basic iron is only fairly strong at $13.50, at Valley furnace, with reports that $13.25 was done on a recent sale involving 7000 to 8000 tons to a local open hearth steel plant, for delivery in first half of the year. There is not much inquiry for foundry iron, but prices are weak, and $13.75, at Valley furnace, for No. 2 is reported to have been shaded. Regular prices of Bessemer and open hearth billets, 4 x 4 in., remain at $23, and sheet and tin bars at $24.50, Pittsburgh, freight to destination added, but these prices are being shaded by small outside steel mills. The coke trade is also in very unsatisfactory shape with prices weak, and in many cases coke has sold at prices below the actual cost of making it.

**Ferromanganese.**—A local consumer is reported to have bought 600 tons of foreign 80 per cent., deliveries 100 tons a month for first half, on the basis of $38.50, Baltimore. The demand has quieted down, as most consumers are well covered through the first half. Several large users are covered for all of 1911. We quote 80 per cent. foreign, for delivery through the first half, at $38.50, Baltimore, the freight rate for delivery in the Pittsburgh district being $1.95 a ton.

**Ferrosilicon.**—No sales of moment have recently been made and new inquiries are light. We quote 50 per cent. for delivery over the first six months of next year at $55 to $55.50, and for prompt delivery at $56 to $56.50. We quote 10 per cent. blast furnace silicon at $23; 11 per cent., $24; 12 per cent., $25, f.o.b. cars, Jisco and Ashland furnaces.

**Skelp.**—A local consumer has bought 1500 tons of sheared iron plates on the basis of about 1.70c., delivered at mill. New inquiry is dull, most consumers being covered, while their requirements are lighter than usual, owing to the slowing down of operations. We quote grooved steel skelp, 1.25c. to 1.30c.; sheared steel skelp, 1.30c. to 1.35c.; grooved iron skelp, 1.60c. to 1.65c., and sheared iron skelp, 1.70c. to 1.75c., all for delivery at consumers' mills in the Pittsburgh district, usual terms.

**Rods.**—New inquiry is light and specifications against contracts are not coming in well. We quote Bessemer rods at $28 to $28.50 and open hearth and chain rods at about $28.50, Pittsburgh.

**Muck Bar.**—The demand is small, owing to the slowing down of operations among the bar iron mills, and prices are weaker. We quote best grades of muck bar, made from all pig iron at $29 to $29.50, delivered at buyer's mill in the Pittsburgh district.

**Steel Rails.**—New orders and specifications for light rails are fairly active, last week being quite a good one in this respect with the Carnegie Steel Company. The Edgar Thomson rail mills of this company at Bessemer are now being operated to 50 per cent. or less of capacity. Quotations on light rails are as follows: 12-lb. rails, 1.25c.; 16, 20 and 25 lb., 1.21c. to 1.25c.; 30 and 35 lb., 1.20c., and 40 and 45 lb., 1.16c. These prices are f.o.b. at mill, plus freight, and are the minimum of the market on carload lots, small lots being sold at a little higher price. We quote standard sections at 1.25c. per pound.

**Plates.**—The Baltimore & Ohio Railroad has ordered 30 all steel passenger cars from the American Car & Foundry Company and 20 from the Pullman Company. The Pressed Steel Car Company has received orders for 50 new steel trolley cars for the Pittsburgh Railways Company and 25 50-ton tank cars for the Solvay Process Company, Syracuse, N. Y. The Pittsburgh Steamship Company has given orders for the building of two new ore boats to be ready for the opening of navigation next year; the Jones & Laughlin Steel Company has placed an order with the American Shipbuilding Company for a new ore boat to duplicate the W. C. Moreland, which was totally wrecked on her second trip down the lakes; the Shenango Furnace Company, of which W. P. Snyder is president, will probably invite bids in the near future for the building of two ore boats, and which will likely be the largest ever built, 615 ft. over all, and built on the new longitudinal system. In addition to these boats, which will require upward of 30,000 tons of plates, the Standard Oil Company has placed contracts for two boats, while other interests have placed contracts for the building of two steel passenger boats, three bulk freighters and two car ferries, so that the lake shipbuilding concerns have quite a good amount of work already on their books and in prospect. The outlook as regards orders for steel cars is not good. The Woods Run plant of the Pressed Steel Car Company is practically shut down, while its McKees Rocks works has enough orders booked to run fairly full until about February 1, but with little beyond that date. The general demand for plates is quiet, and the leading mills are operating to only about 60 per cent. of capacity. We continue to quote ¼ in. and heavier plates in the wider sizes at 1.40c., Pittsburgh, while on the narrow sizes, 1.35c., Pittsburgh, is still being named. There are reports of lower prices than 1.40c. on wide plates being named by one or two mills, but these are not confirmed.

**Structural Material.**—No orders of moment have been placed in this district in the past week. A fair amount of bridge work from the railroads is coming up, but it is slow in being placed. While local mills continue to quote beams and channels up to 15-in. on the basis of 1.40c., f.o.b. Pittsburgh, there are persistent reports that these prices are not the bottom of the market, but are being shaded by outside

# THE IRON AND METAL MARKETS

mills that are using less than 1.40c., Pittsburgh, as a basing price, for delivery at certain points.

**Sheets.**—The sheet trade continues in unsatisfactory condition, with no prospects of betterment in the near future. Distributers and consumers of sheets are purchasing only such quantities as are actually required to meet current needs. Prices are being modified to suit conditions, and in some cases contracts have been canceled. Very little new tonnage has been sold to large consumers on the 2.20c. basis for No. 28 gauge one-pass cold rolled sheets, but this price is being obtained for small lots. None of the sheet mills is operating to full capacity, the American Sheet & Tin Plate Company running at present to only about 50 per cent. Consumers who have been holding off will probably be compelled to come in the market early next year to replenish stocks. The general market on sheets is on the basis of about 2.15c. for No. 28 gauge one-pass black, and 3.15c. for No. 28 galvanized, in carload and larger lots, with $1 a ton higher prices charged for small lots. We give the full schedule of prices now in effect on black and galvanized and on roofing sheets on a previous page.

**Tin Plate.**—A material restriction in operations has occurred recently on account of the slowing down in demand and falling off in specifications against contracts. The American Sheet & Tin Plate Company is operating to about 55 per cent. of capacity. Some heavy contracts for bright plate have been placed in the past three or four weeks from the salmon packers, the meat packers and also from the makers of tin cans, but deliveries on these contracts which run through first quarter and first half of next year will not start for some time. We continue to quote 100-lb. cokes at $3.60 per base box, f.o.b. Pittsburgh.

**Bars.**—The railroads are specifying a little more freely against their contracts for iron bars, and it is also stated that specifications against contracts for steel bars are coming in at a fairly satisfactory rate. New orders for both iron and steel bars are light. We quote steel bars and common iron bars at 1.40c., f.o.b. Pittsburgh.

**Hoops and Bands.**—Several large consumers of both hoops and bands have recently placed contracts covering their requirements through the first quarter, but new demand is confined mostly to small lots to cover actual needs. Specifications against contracts are coming in at only a fairly satisfactory rate. In the Chicago district some cutting has been done recently on bands using the 1.40c. price, Pittsburgh, as a basis. We quote hoops at 1.50c. in large lots and 1.55c. in small lots; bands, 1.40c. in carload and larger lots and 1.45c. in small lots, the latter carrying extras as given in the steel bar card dated September 1, 1909.

**Cotton Ties.**—Deliveries on contracts made early in the year have been pretty well cleaned up, and only small scattering specifications are being placed, for which 78c. per bundle is being charged for December shipment.

**Spikes.**—Reports are that several of the large Western railroads will soon be in the market with inquiries for a considerable tonnage. We quote standard sizes of railroad spikes at 1.50c. to 1.55c. for Western shipment and 1.55c. to 1.60c. for local trade. We quote small railroad and boat spikes at 1.60c. to 1.65c., base, in carload and larger lots.

**Spelter.**—The market is dull and prices are slightly lower. We quote prime grades of Western spelter at 5.80c., East St. Louis, equal to 5.92½c., Pittsburgh.

**Merchant Steel.**—New orders are only for small lots, but specifications against contracts are being received by the mills at a fairly satisfactory rate. It is probable that mill shipments in December will show a falling off as compared with November. We quote, f.o.b. Pittsburgh: Iron finished tire, 1½ x ½ in. and heavier, 1.40c., base, under these sizes, 1.55c.; planished tire, 1.60c.; channel tire, 1.80c., base; toe calk, 1.95c.; flat sleigh shoe, 1.55c.; concave or convex, 1.75c.; cutter shoes, tapered or bent, 2.25c.; spring steel, 2c.; machinery steel, smooth finish, 1.90c.

**Shafting.**—The demand is dull, being only for small lots to cover actual needs. Specifications against contracts have not been coming in well for some time. Regular discounts are being fairly well maintained, and are 55 per cent. off in carload and larger lots, and 50 per cent. off in small lots, delivered in base territory. On desirable contracts and for large lots 55 and 5 per cent. is being named.

**Wire Products.**—Jobbers and consumers of wire and wire nails continue to place orders only for small lots. Specifications against contracts are not satisfactory. It is stated that prices, which were being slightly shaded several weeks ago, are firmer now and are being maintained. Mill shipments of wire and wire nails in December will probably show a falling off as compared with November, but an improvement is looked for early in the new year. We quote galvanized barb wire at $2; painted, $1.70; annealed fence wire, $1.50; galvanized, $1.80; wire nails, $1.70, and cut nails, $1.60, in carload and larger lots, all f.o.b. Pittsburgh, freight to destination being added.

**Merchant Pipe.**—It is stated that a local mill has taken a contract for three miles of 6 to 10 in. steel line pipe, and another contract for 25 to 30 miles is reported to have been placed. General business is quiet, several of the mills are going after business quite agressively, and it is stated that regular discounts on both iron and steel pipe are not being strictly held in all cases. Discounts in effect on both iron and steel pipe are printed on a previous page.

**Boiler Tubes.**—The new demand for both merchant and locomotive tubes is light, and prices are more or less demoralized.

**Iron and Steel Scrap.**—The scrap list of the Pennsylvania Railroad was issued last week and included nearly 20,000 tons of rails and other scrap material, the largest tonnage offered by this road for some time. The scrap trade continues very dull, consumers being covered for several months ahead, and are not taking in material very freely on account of slowing down in operations. The present quiet condition in the scrap trade is expected to continue for some time. We note a sale of about 2000 tons of heavy steel melting scrap at $14, delivered. Dealers quote about as follows, per gross ton, f.o.b. Pittsburgh or elsewhere, as noted:

| | |
|---|---|
| Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery | $13.75 to $14.00 |
| No. 1 foundry cast | 13.50 to 13.75 |
| No. 2 foundry cast | 12.75 to 13.00 |
| Bundled sheet scrap, at point of shipment | 9.00 |
| Rerolling rails, Newark and Cambridge, Ohio, and Cumberland, Md. | 15.75 to 16.00 |
| No. 1 railroad malleable stock | 13.00 to 13.25 |
| Grate bars | 11.25 to 11.50 |
| Low phosphorus melting stock | 17.50 to 17.75 |
| Iron car axles | 24.00 to 24.50 |
| Steel car axles | 20.25 to 20.50 |
| Locomotive axles | 24.50 to 25.00 |
| No. 1 busheling scrap | 12.25 to 12.50 |
| No. 2 busheling scrap | 8.75 to 9.00 |
| Old car wheels | 13.50 to 13.75 |
| Sheet bar crop ends | 15.75 to 16.00 |
| Cast iron borings | 8.00 to 8.25 |
| Machine shop turnings | 8.75 to 9.00 |
| Old iron rails | 16.00 to 16.25 |
| No. 1 wrought scrap | 14.50 to 14.75 |
| Stove plate | 11.50 to 11.75 |
| Heavy steel axle turnings | 10.25 to 10.50 |

**Coke.**—Several large contracts for furnace coke for shipment to the valleys and one contract for Eastern delivery are being figured on, but have not yet been closed. A number of the leading independent producers are still actively at work on a plan to place the coke business on a better basis. Last week the Upper and Lower Connellsville regions turned out 285,049 tons of coke, a falling off over the previous week of 41,000 tons. This is by far the lightest output of coke in the district in any one week so far this year. We quote standard makes of furnace coke for prompt shipment at $1.45 to $1.50 per net ton, at oven, while for delivery over first half $1.75 to $1.80 is quoted. Best makes of 72-hour foundry coke for prompt shipment are held at about $2 per net ton, at oven, and for first half from $2.10 up to $2.50.

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The corporation of Trimble, Mudge & Co. has been organized under a Pennsylvania charter with a capital of $250,000, and will take over the business of Hazard, Mudge & Co., dealers in iron and steel scrap, Buffalo, N. Y., and also the scrap business of Edmund W. Mudge & Co., Frick Building, Pittsburgh. The general offices will be located in the Frick Building, Pittsburgh, with a branch office in Ellicott Square Building, Buffalo, N. Y. Scrap yards will be maintained on the South Buffalo Railway at Lackawanna, N. Y. This new arrangement becomes effective January 1. While officers have not yet been elected, the personnel of the new company is the same as that in the two firms that have been absorbed.

## Chicago

FISHER BUILDING, December 7, 1910.—(*By Telegraph.*)

Trade is very quiet in all lines of finished materials. There is a fair run of orders for small lots from store of sheets, plates and structural material, but buyers from mills are generally reducing their stocks for inventory and are postponing orders wherever possible until after the first of the year. A large number of plants will be closed for the last week or two weeks of the month for repairs usually made at the time of taking inventory, including many industries which formerly closed at other seasons of the year. This general cessation of industrial operations is made necessary by the corporation tax, which requires inventories to be taken at the end of the year. A bright spot in a dull market is in the field of fabricated material. In Chicago

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the City Council has finally adopted the new building code, which has been pending for nearly a year. As it reduces the cost of erecting steel buildings, many large projects for office buildings have been held in abeyance waiting its adoption. The money market has also grown more favorable for financing large buildings, and it is expected that work will commence this winter on buildings requiring 50,000 tons of steel. In the Duluth district about 25,000 tons of steel will be required for work now under way, including an ore dock for the Great Northern Railway, a similar dock for the Duluth & Iron Range and construction work on the plant of the Minnesota Steel Company. At Kansas City preliminary work has begun on the long talked of Union Terminal, and contracts amounting to 35,000 tons are expected to be let soon. In other Western cities, especially on the coast, there are tangible prospects representing a large aggregate tonnage, as much of which has been held back by financial conditions the past year. Concessions are reported from Eastern mills on plates and also on light sections of structural shapes. The weakness in sheets is confined principally to tin mill sizes of black sheets. The only car order reported from Western railroads is one from the Great Northern for about 1000 steel cars. The equipment industries expect developments early in the year in the way of railroad buying. The scrap market is weaker, with the most pronounced decline in rerolling rails.

**Pig Iron.**—The Inland Steel Company has made an additional purchase of 5000 tons of basic from a Valley furnace for immediate shipment. Repairs on this company's furnace will not be completed until about January 1, making necessary an additional purchase for current requirements. The leading steel foundry interest has also been making purchases of basic for first quarter and first half shipment. In foundry grades the market is quiet. November sales were considerably in excess of the average sales of previous months, but foundries in this territory are generally covered for their requirements for first quarter at the present rate of consumption, and will use their inquiries for any additional tonnage for first quarter as an inducement to obtain prices on second quarter iron. The Southern furnaces are not maintaining as firm a front in holding for $11.50, Birmingham, for first quarter, as it is growing difficult to interest buyers in any price higher than $11, and in one or two cases this price has been shaded by Tennessee furnaces. Buyers are generally waiting for a more definite turn in the business situation, and are becoming skeptical regarding reports of a railroad buying movement which is expected by the equipment industries in the near future. Valley furnaces have been making low prices for Western delivery, apparently with a view to reducing their stocks before the opening of navigation and a probable reduction in ore prices. Local furnaces have good shipping orders, but have trouble in getting cars. The following quotations are for December shipment, Chicago delivery:

| | |
|---|---|
| Lake Superior charcoal | $18.00 to $18.50 |
| Northern coke foundry, No. 1 | 16.50 to 17.00 |
| Northern coke foundry, No. 2 | 16.00 to 16.50 |
| Northern coke foundry, No. 3 | 15.75 to 16.00 |
| Northern Scotch, No. 1 | 17.00 to 17.50 |
| Southern coke, No. 1 | 15.85 to 16.35 |
| Southern coke, No. 2 | 15.35 to 15.85 |
| Southern coke, No. 3 | 15.10 to 15.60 |
| Southern coke, No. 4 | 14.85 to 15.35 |
| Southern coke, No. 1 soft | 15.85 to 16.35 |
| Southern coke, No. 2 soft | 15.35 to 15.85 |
| Southern gray forge | 14.60 to 15.10 |
| Southern mottled | 14.60 to 15.10 |
| Malleable Bessemer | 16.00 to 16.50 |
| Standard Bessemer | 17.40 to 17.90 |
| Jackson Co. and Kentucky silvery, 6% | 18.40 to 18.90 |
| Jackson Co. and Kentucky silvery, 8% | 19.40 to 19.90 |
| Jackson Co. and Kentucky silvery, 10% | 20.40 to 20.90 |

(*By Mail.*)

**Billets.**—The market is quiet, with only an occasional inquiry for small lots of forging billets. Chicago mills quote $28 base, Chicago, for carload lots, but this price can be shaded on any desirable tonnage.

**Rails and Track Supplies.**—Western railroads have not yet submitted definite inquiries for their rail requirements for 1911. A preliminary inquiry for 10,000 tons from one road has been pending for some time, but has not been closed. The current demand for track supplies is light. We quote standard railroad spikes at 1.65c. to 1.75c., base; track bolts with square nuts, 2.20c. to 2.30c., base, all in carload lots, Chicago. Light rails, 40 to 45 lb., 1.16c. to 1.20½c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12-lb., 1.25c. to 1.29½c., Chicago.

**Structural Material.**—The Duluth & Iron Range Railroad has let to the American Bridge Company a contract for a new ore dock at Duluth which will require 9500 tons. The Great Northern, which let a contract last summer for the construction of an ore dock at Allouez Bay, near Duluth, has requested that the work be rushed this winter so as to have it ready for spring shipments of ore. The Minneapolis Steel & Machinery Company has booked 346 tons for a sampler building at the Washoe smelter of the Anaconda Copper Company. The fabricating interests are quite optimistic regarding the amount of business pending. More building contracts are expected to be let in Chicago this winter than for some years past, as many of the pending projects have been delayed a long time awaiting a new building ordinance. There is also a large amount of work pending throughout the West on which definite announcements are expected in the near future. The market for plain material from mill is quiet and concessions are reported again on light sections. We quote plain material from mill, 1.58c. to 1.63c., Chicago; from store, 1.80c. to 1.90c., Chicago.

**Plates.**—The mills report a very quiet week in specifications, and do not expect much activity until large orders are placed for freight cars. There has been a fair amount of business this fall in material for steel passenger cars, but the largest tonnage of the plate mills goes into freight equipment. The Great Northern is in the market for 975 steel cars and is expected to close this week. This inquiry includes 500 ore cars, 400 hoppers and 75 tank cars. Ohio mills are again reported making concessions on narrow plates, but the market is firmer than last fall. We quote mill prices at 1.58c. to 1.63c., Chicago; store prices, 1.80c. to 1.90c., Chicago.

**Sheets.**—The only weakness reported in prices is in tin mill sizes of black sheets. Owing to the fact that deliveries from the mills are so prompt, specifications from jobbers have fallen off somewhat the past week. This will keep stocks down until after inventories are taken to comply with the corporation tax law. Based on the price of 3.20c., Pittsburgh, for No. 28 galvanized, in carload lots to jobbers, the differentials ruling in the Chicago market are as follows: No. 30, 3.68c.; No. 29, 3.48c.; No. 28, 3.38c.; No. 27, 3.23c.; Nos. 25 and 26, 3.08c.; Nos. 23 and 24, 2.88c.; Nos. 18 to 22, 2.78c.; Nos. 15 to 17, 2.63c.; Nos. 12 to 14, 2.48c.; Nos. 10 and 11, 2.38c. The differentials on black sheets remain unchanged. No. 10 blue annealed sheets are quoted at 1.83c., Chicago, and No. 28 black, 2.38c. Prices from store, Chicago, are: No. 10, 2.10c. to 2.20c.; No. 12, 2.15c. to 2.25c.; No. 28 black, 2.75c. to 2.85c.; No. 28 galvanized, 3.65c. to 3.75c.

**Bars.**—Specifications for soft steel bars came in better during the month of November than in October, but are still somewhat below expectations. Buyers who hold yearly contracts are gaining more confidence, however, as one implement manufacturer who had given specifications for 2000 tons last fall and then recalled them has reinstated this tonnage for December shipment. New buying is light in both soft steel and hard steel bars. The railroads are slowly increasing their specifications for bar iron. We quote as follows: Soft steel bars, 1.58c.; bar iron, 1.35c. to 1.40c.; hard steel bars rolled from old rails, 1.45c. to 1.50c., all Chicago. From store, soft steel bars, 1.80c. to 1.90c.

**Rods and Wire.**—Jobbers are beginning to order barb wire quite freely for spring trade, but specifications generally provide that shipments be held back so as to arrive after January 1. This is in line with the general tendency in the trade to reduce stocks before taking inventories, as required by the corporation tax law. The bolt, nut and screw manufacturers are not specifying so actively as a year ago, and the automobile trade is considerably short of last year. The manufacturers of poultry netting, wire cloth and screen doors recently announced their prices to the jobbing trade for spring shipment. In each case prices were readjusted on a lower basis than last year. Where custom requires it, the wire mills make contracts covering the first half. Some of the manufacturing consumers of wire insist on such contracts to protect them, but the wire cloth people discontinued that plan of purchasing two years ago, and now buy their wire from month to month at the market price. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.68c.; wire nails, 1.88c.; painted barb wire, 1.88c.; galvanized, 2.18c., all Chicago.

**Merchant Steel.**—The specifications of the agricultural implement manufacturers this year are running ahead of any former year, and the gain in this trade will help to offset the lighter demand from the automobile industry. Store demand is good in all lines excepting plain bars.

**Cast Iron Pipe.**—No lettings of any moment are reported in this territory the past week. Harbor Springs, Mich., recently advertised for bids for 900 tons of water pipe, but bought only 200 tons. The gas companies are getting prices from the foundries for their requirements for spring shipment, and it is expected that a considerable tonnage of gas pipe will be bought this month. The money market is becoming a little more favorable for the pipe foundries, as municipal purchases were restricted to a considerable extent the past year by the inability of cities to sell bonds. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., $27; 6 to 12 in., $26; 16-in. and up, $25, with $1 extra for gas pipe.

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**Old Material.**—Rerolling rails have declined about $1 in the past week, one sale of 1000 tons having been made to a local mill at $14 per gross ton delivered. Melting steel has held firm, but other important lines of scrap have declined 25c. to 50c. per ton. Dealers are generally disappointed at the lack of improvement in business and are disposed to take losses now rather than carry their stocks until later. The rolling mills for several months have been running at considerably less than half their capacity in this territory and the steel mills are down to about 50 per cent. of the capacity of this district. The large malleable foundries which specialize on railroad work are not running over 50 per cent. The agricultural foundries are running full, but represent a smaller production of malleable tonnage. The gray iron foundries will generally close down for the holidays. All along the line more than the usual interruption to business is expected this year on account of the corporation tax requiring inventories December 31. Many factories which formerly ended their fiscal year and closed for repairs at some other season will now adopt the general custom of closing at the end of the year. This has a marked effect in reducing the consumption of scrap, and the inclination to reduce stocks of materials before taking inventory also checks the purchase of spot material. The prices quoted below are for delivery to buyers' works, all freight and switching charges paid. Sellers of scrap usually receive 50c. to $1 less in this district, owing to high switching charges. Following prices are per gross ton, delivered, Chicago:

| | |
|---|---|
| Old iron rails | $16.00 to $16.50 |
| Old steel rails, rerolling | 14.00 to 14.50 |
| Old steel rails, less than 3 ft. | 13.25 to 13.75 |
| Relaying rails, standard sections, subject to inspection | 23.00 to 24.00 |
| Old car wheels | 13.50 to 14.00 |
| Heavy melting steel scrap | 12.25 to 12.75 |
| Frogs, switches and guards, cut apart | 12.25 to 12.75 |
| Shoveling steel | 11.75 to 12.25 |

The following quotations are per net ton:

| | |
|---|---|
| Iron angles and splice bars | $14.00 to $14.50 |
| Iron car axles | 18.50 to 19.00 |
| Steel car axles | 18.50 to 19.00 |
| No. 1 railroad wrought | 11.75 to 12.25 |
| No. 2 railroad wrought | 10.75 to 11.25 |
| Springs, knuckles and couplers | 11.50 to 12.00 |
| Locomotive tires, smooth | 17.00 to 17.50 |
| No. 1 dealers' forge | 10.50 to 11.00 |
| Steel axle turnings | 8.00 to 8.50 |
| Machine shop turnings | 6.75 to 7.25 |
| Cast and mixed borings | 5.00 to 5.50 |
| No. 1 busheling | 9.75 to 10.25 |
| No. 2 busheling | 7.75 to 8.25 |
| No. 1 boilers, cut to sheets and rings | 8.50 to 9.00 |
| Boiler punchings | 14.00 to 14.50 |
| No. 1 cast scrap | 12.25 to 12.75 |
| Stove plate and light cast scrap | 10.50 to 11.00 |
| Railroad malleable | 11.25 to 11.75 |
| Agricultural malleable | 10.50 to 11.00 |
| Pipes and flues | 8.75 to 9.25 |

M. M. Broad & Co., scrap merchants, have dissolved. M. M. Broad has become a member of the American Iron & Supply Company, doing a scrap iron brokerage business in the First National Bank Building, Chicago, and L. J. Newman, his former partner, has accepted a position with the Ohio Iron & Metal Company of the same city.

## Philadelphia

PHILADELPHIA, PA., December 6, 1910.

Buying in both crude and finished materials has been very light and little betterment in the general demand is anticipated until after the turn of the year. The volume of old orders on steel mill books is gradually becoming smaller. Prices are firm, there being no disposition to make any concession at this time, as it is not believed that, under existing general conditions, any pronounced betterment in buying would result. Sheets have been in less active demand and mills are catching up on orders. Bars continue dull. The old material market is quiet, with lower prices noted for heavy melting steel, borings and turnings, owing to the greater anxiety of sellers to dispose of holdings.

**Iron Ore.**—Consumers show no interest in the market except for low phosphorus ore, for which they are looking around for supplies for next year. No sales have been announced. Importations at this port during November totaled 103,126 tons, valued at $360,923, while arrivals during the week ending December 3 aggregated 11,695 tons, valued at $22,418. The classification of importations at this port in October was as follows: Spanish, 18,580 tons; Swedish, 29,483 tons; Newfoundland, 17,550 tons, and Cuban, 23,230 tons. At Baltimore the total receipts of Cuban ore in October aggregated 112,600 tons.

**Pig Iron.**—The market shows little indication of improvement. The larger buyers are pretty well taken care of as far as near future needs are concerned, and current business is confined closely to the smaller consumers, who are taking about the usual quantities, covering month to month requirements. The absence of further weak sellers, who have either blown out their furnaces or retired from the market, gives prices an appearance of greater firmness. While there have been no further curtailments of production in this territory, it is announced that Punxsutawney and Adrian furnaces, in the central part of the State, are to go out about the first of the year. As the average selling price decreases at other furnaces, due to the cleaning up of old high price orders, more consideration is given to curtailment, and it is likely, unless a sharp betterment in the demand sets in, that the early portion of the year will see a further blowing out of furnaces. Transactions in the higher grades of foundry iron have been confined to small lots, with a fair proportion extending over the next three months, at prices ranging from $15.50 to $15.75 for standard brands of No. 2 X foundry, delivered in this vicinity. There has been some buying of low grade irons by the cast iron pipe foundries, who in several instances cleaned up pending business for first quarter delivery. Virginia foundry grades have about settled on a basis of $13, furnace, for either No. 2 X or No. 2 plain. In some instances this figure, which is equal to $15.80 to $16, delivered in this territory, can be done for first half, but the majority of sellers are not disposed to accept orders for shipment beyond the first quarter. Small sales of forge iron are reported at both $14.25 and $14.50, delivered in this vicinity. Basic iron is uncalled for, and prices are entirely nominal. A few sales of low phosphorus have been made, standard analysis being firm at $22.50, delivered here. A moderate tonnage of misfit low phosphorus has been sold at a concession from that price. One melter who was in the market for a large block of standard iron, for first half delivery, has withdrawn from the market. While the general range of quotations is unchanged, more extended deliveries are available. For deliveries in buyers' yards, eastern Pennsylvania and nearby points, the following range of prices is named:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X foundry | $15.50 to $15.75 |
| Eastern Pennsylvania, No. 2 plain | 15.00 to 15.25 |
| Virginia, No. 2 X foundry | 15.80 to 16.00 |
| Virginia, No. 2 plain | 15.80 to 16.00 |
| Gray forge | 14.25 to 14.50 |
| Basic | 14.75 to 15.00 |
| Standard low phosphorus | 22.50 |

**Ferromanganese.**—The local demand is still very quiet and sellers report the heavy Western movement about at an end. While $38.50 to $39, Baltimore, is nominally quoted, speculative offerings, usually at a low figure, control the price situation to a considerable extent.

**Billets.**—A somewhat better volume of small lots in prompt rolling billets is reported, but the aggregate amount coming to the mills shows no material increase. Forging billets have been in less active demand. While there has been some indefinite inquiry for early 1911 requirements, no business is reported. Ordinary open hearth rolling billets for either prompt or first quarter shipment are quoted at $25.50 to $26, delivered in buyers' yards in this vicinity, with forging billets firm at $28, Eastern mill, the usual extras for high carbons and special sizes being added.

**Plates.**—Orders taken by Eastern mills recently show no material increase in tonnage. While some mills gain a few hundred tons, others fall behind a trifle, so that the volume of business coming in is practically unchanged. While there is considerable unfilled business on some makers' books, a good share is for forward shipment, and the amount on hand for delivery this year is growing considerably smaller. Prices are being firmly held, 1.55c., delivered in this territory, representing the minimum for ordinary carload business.

**Structural Material.**—Some little bridge business has come out, 1700 tons being reported placed by the Philadelphia & Reading Railroad, while several other orders for small bridges are pending. While fabricators are figuring on building work in nearby districts there is little new business of any importance that has developed in this immediate vicinity. Some fabricators have considerable work on hand, sufficient to keep them well engaged for some months; mills, however, are catching up on orders in hand for plain shapes. Prices are unchanged, 1.55c. to 1.60c., delivered here, representing quotations for plain shapes.

**Sheets.**—There has been less business offered and mills in this district are rapidly catching up with orders. Unless there is an improvement in buying some will close mills for the holidays somewhat earlier than usual. There is still an absence of any forward buying, consumers purchasing generally for near future requirements. Prices are well maintained, the following range being quoted by Eastern mills for reasonably early delivery: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 and 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The demand appears to be less active. Hardly

# THE IRON AND METAL MARKETS

enough business has been done to establish a market. While quotations for refined iron bars in small lots range from 1.35c. to 1.45c., delivered in this territory, the inside price can easily be done for moderate quantities and would probably be shaded a few hundredths, if the business offered were considered especially desirable. Steel bars continue moderately active at 1.55c., delivered in this district.

**Coke.**—While there have been some negotiations for furnace coke for 1911 delivery, there has been little business consummated in this territory, although consumers would no doubt place orders if their ideas as to prices were met. Foundry coke transactions have been small, at unchanged prices, and largely for early delivery. Prices show little change, the following range, per net ton, about representing the market for deliveries in this territory:

| | |
|---|---|
| Connellsville furnace coke | $3.85 to $4.05 |
| Foundry coke | 4.20 to 4.40 |
| Mountain furnace coke | 3.50 to 3.90 |
| Foundry coke | 3.85 to 4.05 |

**Old Material.**—Business is largely of a hand to mouth character. Mills show little interest in the market generally, and, as a rule, take in only bargain lots. Anxious sellers have in some instances taken lower prices for No. 1 heavy melting steel, $13, delivered, being done in small lots. Several of the leading mills, however, are not inclined to pay more than $12.75 for this grade, and are not particularly anxious to take it in at that figure. Borings and turnings also show a decline on lighter buying and heavier offerings. In the principal rolling mill grades very little business has been done and prices are to a large extent nominal. The following range about represents sellers' ideas of the market for delivery in buyers' yards, eastern Pennsylvania and nearby points, carrying a freight rate from Philadelphia, ranging from 45c. to $1.35 per gross ton:

| | |
|---|---|
| No. 1 steel scrap and crops | $12.75 to $13.25 |
| Old steel rails, rerolling | 15.50 to 16.00 |
| Low phosphorus | 18.00 to 18.50 |
| Old steel axles | 19.50 to 20.00* |
| Old iron axles | 26.00 to 27.00* |
| Old iron rails | 17.50 to 18.00* |
| Old car wheels | 13.50 to 14.00 |
| No. 1 railroad wrought | 16.00 to 16.50 |
| Wrought iron pipe | 12.50 to 13.00 |
| No. 1 forge fire | 11.00 to 11.50 |
| No. 2 light iron | 7.00 to 7.50 |
| Wrought turnings | 8.25 to 8.75 |
| Cast borings | 8.25 to 8.75 |
| Machinery cast | 14.00 to 14.50 |
| Railroad malleable | 13.50 to 14.00 |
| Grate bars | 11.50 to 12.00 |
| Stove plate | 10.00 to 10.50 |

* Nominal.

## Cleveland

CLEVELAND, OHIO, December 6, 1910.

**Iron Ore.**—Taking into consideration the large amount of ore on the docks and in the furnace yards, and the expected limited purchasing next season by some consumers that overbought this year, it is doubtful if the new record of lake ore shipments established in 1910 will be broken during 1911. There has been a little spurt of shipping orders during the past few days from consumers that want to get some of their tonnage from the docks on furnace yards before severe winter weather sets in. We quote prices as follows: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

**Pig Iron.**—Following a moderate buying in small lots of foundry iron during the past few weeks, the market has again quieted down. A few new small inquiries are pending and not much business is expected to come out during the remainder of the year. A leading electrical interest has an inquiry out for 1000 tons of low phosphorus iron for delivery to an Eastern plant in the first half. The market is not firm, and while $14 at furnace is the usual asking price for No. 2 foundry for first quarter and first half delivery, this price is being shaded somewhat, and reports are quite general, but are unconfirmed, that No. 2 foundry can be bought at $13.50 in the Valley for next year's delivery. For Cleveland delivery, local furnaces are adhering to their recent quotations of $14.25 to $14.50, delivered, for the first half. For December delivery we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.90 |
| Northern foundry, No. 1 | $14.50 to 14.75 |
| Northern foundry, No. 2 | 14.25 |
| Northern foundry, No. 2 | 14.00 |
| Gray forge | 13.90 |
| Southern foundry, No. 2 | 15.35 |
| Jackson Co. silvery, 8 per cent. silicon | 19.00 |

**Coke.**—A local interest is understood to have purchased about 60,000 tons of furnace coke, representing its requirements for one stack for six months. Another local interest that had an inquiry out last week has decided to buy only odd lots for spot shipment. There is little demand for foundry grades. One local consumer is asking for prices for 1500 tons for delivery through the entire year. We quote standard Connellsville furnace coke at $1.45 to $1.55 per net ton, at oven, for spot shipment, and $1.75 to $1.80 for delivery through the first half. Connellsville 72-hour foundry coke is held at $2 to $2.10 for spot shipment and $2.25 to $2.50 for the first half.

**Finished Iron and Steel.**—Business in finished lines is light. Some mill agencies are getting as good a volume of orders as in immediately previous weeks, but others notice some falling off. Consumers are allowing their stocks to run low, and there is little expectation of an improvement in the demand until after the first of the year. Shafting is in more active demand than any other finished lines. There is some inquiry for steel bar and small shape contracts for first half delivery. Steel bar specifications are only fair, with prices firm at 1.40c., Pittsburgh. The American Shipbuilding Company has received a contract from the Jones & Laughlin Steel Company for a 12,000-ton lake boat to replace the W. C. Moreland, which was wrecked a few weeks ago. Its construction will require about 4500 tons of plates and shapes. The Pittsburgh Steamship Company is asking for proposals for two large lake freighters for 1911 delivery. Much of the pending structural work has been held up until after the first of the year, and the structural demand is limited mostly to small lots. One order, however, is for 1500 to 2000 tons of structural material for a bridge, which was taken by an independent interest. The Commissioners of Cuyahoga County have rejected all bids for the Dunham road grade crossing elimination work near Cleveland, requiring 400 tons, and will readvertise. Bids have also been rejected for the foundation for the city hall in Cleveland, requiring 500 tons of reinforcing bars, and the work will be readvertised. The demand for sheets is only moderate and prices are not firm, some of the mills shading as much as $2.50 per ton on black sheets for prompt shipment. Some of the sheet mills are seeking first quarter business at 2.15c. for No. 28 black and 3.20c. for galvanized. Rivet prices are being fairly well adhered to for future delivery, but concessions of $2 a ton are being made for spot shipment. The demand for iron bars continues light, with prices stationary at 1.30c. to 1.35c., at mill.

**Old Material.**—Three local mills are so well filled up with scrap that during the past few days they have placed an embargo on shipments. This has made the market practically lifeless. Dealers look for only a limited amount of business during the remainder of the year. Prices to a certain extent are nominal, there not being sufficient business during the week to establish any clearly defined basis. The Big Four Railroad has a list out of somewhat more than its usual tonnage. Dealers' prices, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old steel rails | $14.00 to $14.50 |
| Old iron rails | 16.00 to 16.50 |
| Steel car axles | 20.00 to 20.50 |
| Heavy melting steel | 13.25 to 13.50 |
| Old car wheels | 13.25 to 13.50 |
| Relaying rails, 50 lb. and over | 22.50 to 23.50 |
| Agricultural malleable | 12.00 to 12.50 |
| Railroad malleable | 13.00 to 13.50 |
| Light bundled sheet scrap | 9.00 to 9.50 |

The following prices are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron car axles | $21.00 to $21.50 |
| Cast borings | 6.00 to 6.50 |
| Iron and steel turnings and drillings | 6.75 to 7.00 |
| Steel axle turnings | 8.75 to 9.00 |
| No. 1 busheling | 11.00 to 11.50 |
| No. 1 railroad wrought | 13.00 to 13.50 |
| No. 1 cast | 11.50 to 12.00 |
| Stove plate | 10.50 to 11.00 |
| Bundled tin scrap | 11.00 to 11.50 |

## Cincinnati

CINCINNATI, OHIO, December 7, 1910.—(*By Telegraph.*)

**Pig Iron.**—Up to the present time curtailment intentions with the producers have been largely a matter of talk with no definite results. The furnace interests now seem to realize that it will be necessary to cut down the output, and rumors are out that several Northern furnaces will go out of blast this month. Practically all of them have been waiting on the other furnace to make the move, and as a consequence production has been outrunning consumption. Agricultural implement manufacturers and stove makers have been steady customers, and the jobbing foundries have also been fairly good melters, but this trade is not now good, and it is estimated that the foundries in this vicinity have enough iron on hand to operate at least four months without adding to present stocks. About 8000 tons of No. 2 foundry and analysis iron was contracted for by Illinois agricultural implement manufacturers last week, most of which business went to Southern furnaces. A local melter bought 500 tons of foundry iron for first half, about equally divided between Northern and Southern iron. Other sales reported are only small lots. A satisfactory feature of the present situation

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is the free movement of contract iron. It is stated that some Southern spot iron has been offered as low as $10.75, Birmingham basis. The first quarter price is $11, delivered, with a strong probability that orders would be accepted for first half at this same figure. Northern No. 2 foundry remains at $14, and malleable around $14.25 to $14.50, Ironton. For immediate delivery and for the remainder of the year, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern coke, No. 1 foundry | $14.75 to $15.25 |
| Southern coke, No. 2 foundry | 14.25 to 15.75 |
| Southern coke, No. 2 foundry | 13.75 to 14.25 |
| Southern coke, No. 4 foundry | 13.50 to 14.00 |
| Southern coke, No. 1 soft | 14.75 to 15.25 |
| Southern coke, No. 2 soft | 14.25 to 14.75 |
| Southern gray forge | 13.50 to 14.00 |
| Ohio silvery, 8 per cent. silicon | 19.20 |
| Lake Superior coke, No. 1 | 15.70 to 16.20 |
| Lake Superior coke, No. 2 | 15.20 to 15.70 |
| Lake Superior coke, No. 3 | 14.70 to 15.20 |
| Standard Southern car wheel | 25.25 to 25.75 |
| Lake Superior car wheel | 22.25 to 22.75 |

(*By Mail.*)

**Coke.**—Furnace and foundry coke move rather slowly. No change is anticipated for the immediate future, and there is likely to be a falling off in furnace coke shipments, as several blast furnace owners have signified an intention of blowing out in the near future. In the Connellsville field spot furnace coke is offered as low as $1.45, but the Wise County and Pocahontas operations appear to be getting from 5c. to 20c. above this figure. Contract prices in all three fields range from $1.65 to $1.85. Foundry coke is quoted at $2 for spot shipment and around $2.25 for contracts, and only small tonnages are being sold. All the above prices are per net ton at oven.

**Finished Iron and Steel.**—The market is just about holding its own. Prices are unchanged, 1.40c. representing mill quotations on steel bars and structural material, with warehouse prices around 1.75c. to 1.85c. There is a fair demand for hoops and bands from the brewing and distilling interests.

**Old Material.**—A local dealer sold a medium sized lot of wrought scrap last week, but transactions in both wrought and cast scrap are mostly limited to sale of carload lots for immediate requirements. As nearly all dealers are stocked up, they are not making prices attractive enough to bring in any large quantities of scrap. Prices for delivery in buyers' yards, southern Ohio and Cincinnati, are as follows:

| | |
|---|---|
| No. 1 railroad wrought, net ton | $12.50 to $13.00 |
| Cast borings, net ton | 4.50 to 5.00 |
| Steel turnings, net ton | 6.00 to 7.00 |
| No. 1 cast scrap, net ton | 11.50 to 12.50 |
| Burnt scrap, net ton | 8.00 to 9.00 |
| Old iron axles, net ton | 17.50 to 18.50 |
| Old iron rails, gross ton | 14.50 to 15.00 |
| Relaying rails, 50 lb. and up, gross ton | 22.50 to 23.50 |
| Old car wheels, gross ton | 12.00 to 13.00 |
| Heavy melting steel scrap, gross ton | 12.00 to 12.50 |

## Buffalo

BUFFALO, N. Y., December 6, 1910.

**Pig Iron.**—The market has been extremely quiet, with a perceptible falling off both in inquiry and in new business placed. Such orders as have been received are small, and the largest inquiry coming in was for 1000 tons of foundry iron from a central New York concern. The slackening of demand is especially noticeable from cast iron pipe foundries and those supplying the automobile trade. Some foundries in general trade, although fairly well filled with work, have stopped coming into the market for the present. Radiator and stove foundries are busy, but as a rule have their wants covered for some time ahead. The price situation is not particularly cheering from the furnacemen's point of view. Five furnaces are out of blast in the Buffalo district; the Punxy Furnace at Punxsutawney, Pa., will be blown out January 1, for an indefinite period, and the Adrian Furnace at Dubois, Pa., will go out of blast about the same time. This may be cited as an example of the disposition on the part of pig iron makers to meet the situation, which has reached an unprofitable basis, by further curtailment of production. There is so little business going for the past week that prices have not been tested, and we, therefore, quote the same as for the previous week, f.o.b. Buffalo, as follows:

| | |
|---|---|
| No. 1 X foundry | $15.00 to $15.50 |
| No. 2 X foundry | 14.50 to 15.00 |
| No. 2 plain | 14.50 to 14.75 |
| No. 3 foundry | 14.25 to 14.50 |
| Gray forge | 14.00 to 14.25 |
| Malleable | 14.75 to 15.25 |
| Basic | 14.50 to 15.00 |
| Charcoal | 17.50 to 18.25 |

**Finished Iron and Steel.**—The market has been without activity in any line, so far as new business is concerned, current sales and specifications on contracts both showing a reduction in volume. Mills supplying this district report that the output has overtaken specifications in nearly every line of finished materials, and production is being curtailed somewhat to meet these conditions, even in bar products. The agency of the principal interest states that Canadian export business continues to lead over domestic sales. In structural lines business for the week has been light, only one or two projects developing to the stage where figures are being asked. Plans for new factory buildings to be erected by the Crouse-Hinds Electrical Company at Syracuse have been completed and bids are being received; a considerable tonnage of steel roof trusses will be required, probably about 300 tons in all. Contract for steel for the H. D. Taylor Company's warehouse, Buffalo, about 100 tons, has been awarded to the George Kellogg Structural Company.

**Old Material.**—The market continues exceedingly dull, with practically no demand from steel mills. Foundries are taking a moderate amount of cast scrap. The principal lines manifesting any degree of strength are machinery cast scrap and railroad wrought. Prices are largely nominal and unchanged from last week, with the exception of heavy melting steel and cast borings, which are slightly weaker. We quote as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy melting steel | $11.75 to $12.25 |
| Los phosphorus steel | 17.00 to 17.50 |
| No. 1 railroad wrought | 15.00 to 15.50 |
| No. 1 railroad and machinery cast scrap | 13.50 to 14.00 |
| Old steel axles | 18.50 to 19.00 |
| Old iron axles | 23.00 to 23.50 |
| Old car wheels | 14.00 to 14.50 |
| Railroad malleable | 13.00 to 13.25 |
| Boiler plate | 9.75 to 10.25 |
| Locomotive grate bars | 10.75 to 11.25 |
| Pipe | 9.75 to 10.00 |
| Wrought iron and soft steel turnings | 6.75 to 7.00 |
| Clean cast borings | 6.50 to 6.75 |

The Grade Crossing Commission, Buffalo, has decided to build two additional viaducts over the Erie Railroad, one at Genesee street and the other at Doat street.

Joint contract is soon to be let by the city of Niagara Falls and the New York Central Railroad for the construction of a steel viaduct over the New York Central tracks at Eleventh street, Niagara Falls.

The Groton Bridge Company, Groton, N. Y., has received contract from the State of New York for the construction of the steel superstructure of a highway bridge over the Erie Canal at Rochester, at its bid of $28,841.

The American Pipe & Construction Company, Philadelphia, has received contract from the State of New York for dredging the Oswego Canal, between Oswego and Fulton, for $2,323,998.

## St. Louis

ST. LOUIS, December 5, 1910.

**Pig Iron.**—With some of the leading offices a quite satisfactory business was done the past week. One seller reports sales of upward of 10,000 tons. These transactions represent sales in various quantities and shipment (mostly Southern No. 2 foundry and analysis iron, and for shipment over the last half) with some 18 consumers, partly local and partly in St. Louis territory. Another house sold upward of 3000 tons, while the leading interest secured a contract from a local steel foundry for 10,000 tons of Southern basic, for shipment over the first half. The sale of 1200 tons of Southern 2 to 2½ silicon for shipment over the first half, was also reported. Conditions as to prices continue unchanged. Business is pretty much confined to forward delivery and prices for Southern No. 2 foundry range from $11 to $12, Birmingham, with doubtless the major portion of the sales being made at the inside figure.

**Coke.**—Business is wholly confined to a jobbing basis, there being no round lot inquiries. Specifications on contracts are coming in freely, however, and shipments are proceeding satisfactorily. The tone of the market is weak. We quote for best Connellsville 72-hour foundry $2 to $2.25 per net ton; second quality, $1.85 to $2, f.o.b. oven.

**Finished Iron and Steel.**—The leading interest reports an improvement in the inquiry for standard rails and mentions sale of approximately 5000 tons to the Cotton Belt Railroad. For light rails there is a fairly brisk inquiry from coal interests. In structural material the demand is mainly confined to specific work. There is a moderate inquiry for bars from jobbers and agricultural implement manufacturers. In track material business is light.

**Old Material.**—The demand for relaying rails is gaining in volume and urgency, with the result that prices have advanced. While the bulk of the inquiry is for standard sections, there is also a good demand for light sections. For scrap iron and steel new business is still of small proportions, but the leading dealers are busy in filling prior contracts and trading with each other. The following offerings

# THE IRON AND METAL MARKETS

by the railroads are reported for the week: Missouri Pacific, 1000 tons; St. Louis & San Francisco, 750 tons; Wabash, 550 tons. Prices are nominally unchanged. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

| | |
|---|---|
| Old iron rails | $11.50 to $12.00 |
| Old steel rails, rerolling | 13.00 to 13.50 |
| Old steel rails, less than 3 ft | 12.25 to 12.75 |
| Relaying rails, standard sections, subject to inspection | 25.00 to 25.50 |
| Old car wheels | 13.00 to 13.50 |
| Heavy melting steel scrap | 11.75 to 12.25 |
| Frogs, switches and guards, cut apart | 11.75 to 12.25 |

The following quotations are per net ton:

| | |
|---|---|
| Iron fish plates | $11.50 to $12.00 |
| Iron car axles | 18.50 to 19.00 |
| Steel car axles | 17.50 to 18.00 |
| No. 1 railroad wrought | 12.00 to 12.50 |
| No. 2 railroad wrought | 11.00 to 11.50 |
| Railway springs | 10.00 to 10.50 |
| Locomotive tires, smooth | 16.50 to 17.00 |
| No. 1 dealers' forge | 9.00 to 9.50 |
| Mixed borings | 4.50 to 5.00 |
| No. 1 busheling | 10.50 to 11.00 |
| No. 1 boilers, cut to sheets and rings | 9.00 to 9.50 |
| No. 1 cast scrap | 11.50 to 12.00 |
| Stove plate and light cast scrap | 9.50 to 10.00 |
| Railroad malleable | 9.00 to 9.50 |
| Agricultural malleable | 8.50 to 9.00 |
| Pipes and flues | 9.00 to 9.50 |
| Railroad tank and sheet scrap | 9.00 to 9.50 |
| Railroad grate bars | 8.50 to 9.00 |
| Machine shop turnings | 7.50 to 8.00 |

The Railroad Committee of the House of Delegates has reported a bill requiring the Missouri Pacific Railway to abolish the Chouteau avenue grade crossing by constructing a viaduct. The bill requires the railroad to bear the expense, estimated at $200,000.

The East Side Levee & Sanitary District has announced that bids will be opened January 9 for four highway bridges over the division channel, which is now being dug to divert the waters of Cahokia Creek into the Mississippi River. Each span of the bridges will be 270 ft. long. The estimated cost of the four bridges, which will be of steel, is $45,000.

## San Francisco

SAN FRANCISCO, November 30, 1910.

Conditions are still unsatisfactory, the movement being confined almost entirely to jobbing sales and small orders for stock, but the undertone of the market is felt to be more favorable. This is partially due to the expectation of the Panama-Pacific Exposition, which if held here would cause a material increase in the requirements of San Francisco and of California as a whole between now and 1915. It is also believed that the agricultural prosperity of the country will bring a strong reaction from recent conditions by next spring. While little new business is expected before the end of the month orders are to be placed early in December for a substantial tonnage in several lines. The fact that merchants are beginning to order for stock, even in small quantities, is taken as a favorable indication.

**Bars.**—Little new business is being booked by mill interests, and in view of the increasing production on the Pacific Coast the outlook for the future is rather uncertain. Manufacturing interests are still proceeding with caution, but the jobbing trade shows a little more life, and preparations for development work in a number of lines should bring out more inquiry in the near future. With the stock taking period approaching, however, no heavy movement is likely before the close of the year. Merchants are well supplied with a heavy tonnage of foreign steel under contract, and no extensive purchases are expected from this quarter. Reinforcing bars are in fair demand for this time of year, but the prices are comparatively low. Prices on soft steel are steadily held, no further reduction being anticipated. Bars from store, San Francisco, are quoted at 2.20c. for iron and 2.40c. for steel.

**Structural Material.**—Local building business has recently fallen far below normal, the valuation of contracts let last week being the lowest of any week in several years. The city seems to be well provided for in all classes of buildings, though architects have several large projects in hand which will soon be heard from. Local steel contractors have very little unfinished work on hand, but are counting on a number of schools for the early part of next year. The Cortez Hotel will probably be let by the end of the week, and an apartment house will require about 200 tons, but otherwise there is nothing in sight before the end of the month. Several jobs are scheduled to come out early in December, among them being the Lowell High School, the Sacramento court house and the Masonic Temple. Figures will probably be taken on the Oakland city hall next month. The American Bridge Company has taken a fair order for a railroad bridge in Oregon, and a contract is expected on the court house at Portland, Ore. A fabricating order for the Hogue Building, Seattle, is due in a few days. The Bon Marche department store in that city may be withheld for some time. Plans are being drawn for a six-story department store for Hale Bros. in this city, which will require a substantial tonnage, but it will not be ready for figuring for several months. Beams and channels, from store, 3 to 15 in., San Francisco, are quoted at 2.60c.

**Rails.**—Standard sections continue moderately active, and the total tonnage booked so far this month is considered very encouraging. Plans for extensions and new work on a number of small lines in various parts of the State are reaching a stage at which buying may be expected, and the larger roads show a disposition to proceed with branch lines and improvements more actively than for some time past.

**Plates and Sheets.**—New business in tank plates is rather slow, though fabricators have a good volume of work, and the outlook is favorable for next year. A fair tonnage of marine plates will be required for repair work, but the movement in this line is not heavy. Black and galvanized sheets have been very dull, but some improvement is noted in the distributive trade, and orders for stock are larger than for several months. Several new inquiries are coming up for riveted pipe and tank work. It is reported that a gas plant is to be installed at Willows, Cal. The city of Los Angeles has taken bids on about 1100 ft. of 12-in., 14-gauge riveted pipe, and will let a contract about the end of the year for 1409 ft. of riveted steel siphon, 9 ft. 6 in. in diameter.

**Merchant Pipe.**—The current movement is by no means satisfactory, but is apparently on the increase. Some mill representatives report an improvement in the oil fields, which is not noticed by others. The oil industry is rapidly getting into better shape, and with increasing consumption the surplus output is gradually moving off. All newly projected pipe lines, however, have been dropped for the present, and those who are boring wells have considerable unused stock on hand. The distributive trade is inactive, but jobbing stocks show considerable reduction and small orders of a sorting-up nature are coming out freely. If this business continues on the present scale, November will be the best month since last June.

**Cast Iron Pipe.**—The first large pipe contract of the Bay Cities Water Company, Oakland, Cal., has been let to the Crane Company, and calls for approximately 30 miles of pipe, varying in size from 4 to 12 in. Shipment is to commence at once. The tonnage moving on small purchases is satisfactory, and a material increase in demand is expected during the next few months. Fire hydrants and water works supplies are in good demand, Los Angeles being in the market for a lot of fittings, &c., and Portland, Ore., for 200 hydrants, with smaller inquiries from other places. Reports on recent investigations by insurance interests in many coast towns are causing a general agitation for water works improvements. The town of Ashland, Ore., is preparing to issue $170,000 bonds for extending the water system.

**Pig Iron.**—Business is even quieter than before, as none of the local foundries have much work on hand, and operations in other parts of the State have been greatly curtailed. Occasional small lots are sold, but the tonnage is below normal, and with more or less imported material accumulating prices are weak and irregular. English, Chinese and continental iron can hardly be sold above $22, and there is scarcely any movement at that figure. The Noble Electric Steel Company expects to resume the production of pig iron as soon as the Northern California Power Company completes its plant.

**Old Material.**—There is little feature to the market at the moment, except for the increasing scarcity of cast scrap. Immediate requirements in this line are small, but offerings have been diminishing for some time and no large lots of good material are coming on the market. Some melters have accordingly shown a disposition to buy for future requirements, and dealers are very firm as to values. There is little new business in steel scrap, but with a good demand in prospect dealers are endeavoring to accumulate a supply. Cast scrap is quoted at $18 per net ton, but good heavy material would probably bring a better figure. Other quotations are: Steel melting scrap, per gross ton, $12.50; wrought scrap, per net ton, $13.50; rerolling rails, per net ton, $15.

## Birmingham

BIRMINGHAM, ALA., December 5, 1910.

**Pig Iron.**—The buying the past week in this market has continued at a greater rate than would generally be supposed, the greater portion by far having been for forward delivery. In some cases purchases have been made on the $11, Birmingham, basis, for sufficient iron to run the con-

# THE IRON AND METAL MARKETS

sumer through the first half, which is equivalent to a certain extent to making the $11 price good for the first half of 1911. Still, no one can be found openly quoting such figure. One large interest that took a considerable tonnage of $11 iron announces its withdrawal from the market. Another states that in view of the likelihood of one of its furnaces soon going out, and considering the tonnage on its books unfilled, it will take no more business for the present. Were it not for the fact that stocks on the yards here showed a material increase in November, and there is no iron of consequence selling for December delivery, the market would have really a strengthening tendency. Spot iron is admittedly the weak feature, and if it should be held firm through December the producers will have a good deal over which to congratulate themselves. The recent buying of Southern iron has been from all sections of the country and for all grades, indicating that consumers of all kinds of iron realize that prices are low. As a matter of fact, if a break below the $11 figure should be made, and such a price become general, more than one furnace now running would be forced to suspend operations.

**Cast Iron Pipe.**—The makers of water pipe are simply "resting on their oars," so far as new business is concerned. They are still fairly busy on orders and just now are cleaning up their stocks of raw material as far as possible and arranging for the inventories which will occupy the last two weeks of the year. The only large contracts of importance now pending are those in Chicago and Portland, Ore. The latter has been up for consideration for some time, but the greater portion of the tonnage is yet to be placed. The makers of sanitary pipe find jobbers with rather scant stocks, but disinclined to take anything until after inventories. Prices in this line are lower than they have been for years. On water pipe we revise quotations, f.o.b. cars, Birmingham, per net ton, as follows: 4 to 6 in., $20 to $20.50; 8 to 12 in., $19.50 to $20; over 12-in., $18.50 to $19. Gas pipe continues its differential of $1 per ton over this schedule.

**Old Material.**—There is nothing new to be said of the scrap iron market and we continue to quote nominally, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old iron axles | $15.00 to $15.50 |
| Old iron rails | 13.00 to 13.50 |
| Old steel axles | 14.50 to 15.00 |
| No. 1 railroad wrought | 13.00 to 13.50 |
| No. 2 railroad wrought | 9.00 to 9.50 |
| No. 1 country | 8.00 to 8.50 |
| No. 2 country | 7.50 to 8.00 |
| No. 1 machinery | 9.50 to 10.00 |
| No. 1 steel | 11.50 to 12.00 |
| Tram car wheels | 9.50 to 10.00 |
| Standard car wheels | 10.50 to 11.00 |
| Light cast and stove plate | 8.00 to 8.50 |

## The German Iron Market Quieter

BERLIN, November 24, 1910.

The market situation has grown rather quieter. Buyers are holding back, but in most lines this is due to the fact that they have provided for their wants for a considerable period ahead. In view of the advanced season it is not expected that the market will show any improvement till toward the end of the March quarter, when the spring business will be coming in. In structural shapes, for example, it is expected that the demand will then be considerably heavier than for several years. Building operations have been at a low ebb for a long period, and labor questions will probably not arise to trouble builders as they have done for a year or two.

It is no little encouragement to the German trade that the downward movement of prices in Belgium has apparently come to a standstill, and that even an improvement is mentioned in some cases. This week a Brussels dispatch states that the price of semifinished steel for export to England has risen 1 shilling, and that the home price for bar iron has been advanced from 132.50 to 135 francs. Another encouraging event for the German trade is a slight reduction of coal prices. The Coal Syndicate has just given out its list for 1911, with prices about 6c. a ton lower, while the reductions made by the Prussian Government's mines in the Saar district range as high as 24c.

### Dealers Create a Flurry in the Bar Trade

The event of the week in the trade has been the public bidding for large contracts in bars for the railroad authorities at Berlin, which brought out bids considerably below the convention price. One firm of dealers bid as low as 103 marks on basic steel bars and 104 on open hearth, delivered at Oberhausen, near the lower Rhine, whereas the convention's price at that point is 110 marks. Other bids were a little higher. The publication of this news created quite a stir among the members of the convention, since it was assumed that one or more of the big mills, members of the combination, must be behind those low offers. Accordingly a meeting of the latter was hastily got together at Dortmund yesterday to take action against the offending member or members. It transpired, however, that the dealers made their bids without any arrangement whatever; but it is not stated whether they have on hand stocks sufficient to fill the orders in question, or whether they are speculating upon getting bars from manufacturers later on at prices low enough to allow them a profit on the transaction. This meeting apparently brought out evidence, nevertheless, that the convention is on a rather weak footing; hence a further meeting was appointed for the middle of January to deliberate upon the future of the combination.

The ore market has continued active and strong, and in some qualities complaints of scarcity are heard. The arrivals of Spanish ores are still insufficient, and, as prices are now 60c. to 72c. per ton higher than at the beginning of the year, German furnaces are substituting other ores as far as possible. English competition has also driven the price of a new form of Swedish ores—so-called concentrates of low phosphorus contents—so high that German buyers have declined to follow. German companies, however, have long contracts for ordinary Swedish ores, and these are being filled regularly. Ores from Normandy have been coming into Germany in growing quantities, and Russian ores have also gone into the Silesian district in considerably larger amounts.

In semimanufactured steel the business situation has scarcely changed, though it is mentioned that the competition of the outside open hearth works with the Steel Works Union has latterly grown sharper. The export in this specialty is pretty active, but American competition has affected the price situation unfavorably. The demand for structural shapes has slackened as the winter begins and building operations are curtailed. The Steel Works Union to-day announced the opening of business for the first quarter of 1911 at unchanged prices—namely, 115 to 117.50 marks per ton. Owing to the excellent foreign demand the business in rails and other track supplies continues good. The Union has just given out a statement showing that of its production of rails and such supplies during the half year ended with September 30 not less than 45 2-3 per cent. was exported. At the same time nearly one-third of the production of semimanufactured steel was exported, and somewhat more than one-fourth of the structural shapes.

## Metal Market

NEW YORK, December 7, 1910.

### THE WEEK'S PRICES

Cents Per Pound.

| | Copper. | | | Lead. | | Spelter. | |
|---|---|---|---|---|---|---|---|
| Dec. | Lake. | Electrolytic. | Tin. | New York. | St. Louis. | New York. | St. Louis. |
| 1 | 13.00 | 12.87½ | 37.85 | 4.50 | 4.40 | 5.95 | 5.80 |
| 2 | 13.00 | 12.87½ | 37.85 | 4.50 | 4.40 | 5.95 | 5.80 |
| 3 | 13.00 | 12.87½ | .... | 4.50 | 4.40 | 6.00 | 5.85 |
| 5 | 13.00 | 12.87½ | 37.50 | 4.50 | 4.40 | 6.00 | 5.85 |
| 6 | 13.00 | 12.87½ | 37.85 | 4.50 | 4.40 | 6.00 | 5.85 |
| 7 | 13.00 | 12.87½ | 37.95 | 4.50 | 4.40 | 6.00 | 5.85 |

Pig tin is higher than it has been at any time this year. Copper is listless, at unchanged prices. Spelter has advanced to 6c., New York. Lead is firm, but quiet.

**Copper.**—The copper market has been very quiet, awaiting the announcement of the producers' statistics, which will be out to-morrow. Electrolytic copper has softened somewhat in tone, but there is very little trading, and it is thought that if any demand develops the price will improve. Lake copper is very firm at 13c.; electrolytic is held at 12.87½c., but there are reports of offerings at slightly under that price. The English market continues firm, but manufacturers have adopted a waiting attitude, although there are reports of great activity in all consuming centers. Favorable statistics, it is stated, will bring about a good demand in the London market. The London market closed to-day with spot copper selling at £56 16s. 3d. and futures at £57 12s. 6d. Sales amounted to 300 tons of spot and 500 tons of futures. The market closed quiet.

**November Copper Averages.**—The Waterbury average for November was 13c. The average price for lake copper in New York for November was 12.97½c., and the average price of electrolytic was 12.85c.

**Pig Tin.**—The pig tin market is quiet, but tin for immediate delivery is now selling higher than at any previous time this year. The market went up to 37.85c. yesterday, with little trading. Some consumers whose stocks have run down have come into the market for small quantities, but purchasers generally show a great deal of caution about placing orders. It appears that pig tin stocks are pretty well concentrated, but it is very probable that the high price of the metal in this market at present is largely due to the operations of the London syndicate. In New York to-day pig tin was sold for 37.95c. The London market closed with spot tin selling at £172 5s. and futures at £172

# THE IRON AND METAL MARKETS

5s. The sales amounted to 140 tons of spot and 150 tons of futures. The market closed firm.

**Tin Plates.**—The market is dull. A number of independent mills are reported to have taken steps toward further reducing production. The price for 100-lb. coke plates remains at $3.84.

**Lead.**—The recently advanced prices are being well maintained, but the market is very quiet. Outside sellers are keeping their quotations above that of the leading interest in New York, but they are meeting the price made by it in the West. The metal is now very firm at 4.50c., New York, and 4.40c. in St. Louis.

**Spelter.**—The spelter market continues in the control of the manufacturers and a few large sellers, and they have succeeded in advancing the price to 6c., New York. There is very little call for spelter, as the sheet zinc business and galvanized iron industry are both very quiet. Quotations are 5.85c., St. Louis, and 6c., New York.

**Antimony.**—The antimony market has weakened perceptibly, and there are offerings of one of the better known grades at greatly reduced prices. It appears that a number of sellers are overstocked. Hallett's is selling at 7.75c.; Cookson's can be had at around 8c.; Chinese grades, 99 per cent. guaranteed, are costing about 7¼c., and Hungarian grades are selling at from 7c. to 7.12½c.

**Old Metals.**—The market shows no improvement in the demand. Dealers' selling prices are unchanged, as follows:

| | Cents. |
|---|---|
| Copper, heavy cut and crucible | 12.50 to 12.75 |
| Copper, heavy and wire | 11.75 to 12.00 |
| Copper, light and bottoms | 11.00 to 11.25 |
| Brass, heavy | 8.25 to 8.50 |
| Brass, light | 7.00 to 7.25 |
| Heavy machine composition | 11.25 to 11.50 |
| Clean brass turnings | 8.00 to 8.25 |
| Composition turnings | 9.00 to 9.50 |
| Lead, heavy | 4.20 to 4.25 |
| Lead, tea | 3.95 to 4.00 |
| Zinc scrap | 4.30 to 4.40 |

**Metals, Chicago,** December 6.—A fair amount of copper is being sold for January and February shipment, as well as for prompt delivery. Some of the larger buyers have inquiries in the market for March and April. Consumers of tin are restricting their purchases to urgent requirements. Lead prices are being shaded at St. Louis, and the spelter interests are also disposed to make concessions. We quote Chicago prices as follows: Casting copper, 13c.; lake, 13⅛c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, carloads, 38¼c.; small lots, 40c.; lead, desilverized, 4.45c. to 4.50c., for 50-ton lots; corroding, 4.70c. to 4.75c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.90c. to 4.95c.; Cookson's antimony, 10¼c., and other grades, 9c. to 10c., in small lots; sheet zinc is $7.75, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 12½c.; copper bottoms, 10½c.; copper clips, 12c.; red brass, 11c.; yellow brass, 9c.; light brass, 6c.; lead pipe, 4¼c.; zinc, 4¼c.; pewter No. 1, 24½c.; tin foil, 30c.; block tin pipe, 33c.

**Metals, St. Louis,** December 5.—Lead is quoted at 4.40c. and quiet, spelter is easier at 5.80c. and slower, both at East St. Louis. Zinc ore remains at $45 per ton, Joplin; first grades are still in best demand. Tin is sharply higher and held at 38.60c. per pound; antimony (Cookson's) is easier at 8.10c.; lake copper is quoted at 13.35c.; electrolytic, 13.20c., all at St. Louis. The demand for finished metals the past week was much improved.

## New York

NEW YORK, December 7, 1910.

**Pig Iron.**—Inquiry has fallen off very considerably in the past week, and an inactive market is looked for until January. Foundry operations have been on a more contracted scale, and melters appear to be well supplied with iron for the immediate future. More effort is being made by some sellers to market their product, and buyers seem to be waiting for further concessions. There is a growing opinion that an even more stringent reduction of output must be enforced before the market will show any stiffening of prices. In the past week sales of 100-ton to 500-ton lots, with two or three contracts for larger amounts, have been made to New York State and New Jersey foundries. The low phosphorus portion of an inquiry for 7000 tons from an electrical company is reported to have been closed, but 5000 tons of foundry iron is yet to be bought. We quote as follows, for tidewater delivery: Northern No. 1 foundry, $15.50 to $16; No. 2 X, $15.25 to $15.50; No. 2 plain, $15.25; Southern No. 1 foundry, $15.50 to $16; No. 2, $15.25 to $15.50.

**Steel Rails.**—The West Chester Railroad, West Chester County, N. Y., is in the market for 5300 tons of rails. For the extensions of the New York City elevated lines on Third and Second avenues about 15,000 tons of rails will be required. The Reading order has not been officially announced, but it is understood that the Pennsylvania Steel Company and the Bethlehem Steel Company will receive 10,000 tons each. The Illinois Steel Company booked 13,000 tons last week, including 5000 tons for a Southwestern line. The Tennessee Company has taken an order for 10,500 tons for the Nashville, Chattanooga & St. Louis and 500 tons for the Vicksburg, Shreveport & Pacific Railroad.

**Finished Iron and Steel.**—No improvement is to be noted in general conditions. The mills generally are not working at more than 60 per cent. of their capacity and new business is not being taken in sufficient amount to prevent a still further reduction of 10 per cent. in the near future unless a decided and unexpected turn ensues for the better. This condition is very largely due to the extent to which the mills increased their producing capacity in the last three years. Under the old order of things the present volume of business would give the mills all they could do. A period of readjustment confronts us and it remains for the country's natural growth to restore the proper balance between supply and demand. The contracts for structural material closed last week and the new business which came into the market total up rather better than for the previous week. The lowest bid for the general contract for the post-office at the Pennsylvania terminal in this city was submitted by R. E. Henningham. The Geo. A. Fuller Company was the next lowest bidder and guaranteed the construction in a materially shorter time. No decision has been reached, but it appears to be between these two bidders. The American Bridge Company was awarded the 4300 tons of steel for the East Cambridge extension of the Boston Elevated Railway, 9500 tons for an ore dock at Duluth for the Duluth & Iron Range Railroad, 700 tons for the Queen & Crescent, and 2300 tons for a loft building at Fifth avenue and Thirty-eighth street, New York, for Bonwit, Teller & Co. The Taft Hotel at New Haven, requiring 2000 tons, has gone to the Lackawanna Steel Company. The Thompson-Starrett Company of this city has been awarded the contract for the new Insurance Exchange Building, Chicago, 22 stories, which it is claimed will be the largest office building under one roof in this country or perhaps in the world. The National Bridge Works has 800 tons for an office building on Church street, New York; the Western Iron Works, 750 tons for the Cortez Hotel, San Francisco, originally reported to have gone to Milliken Bros.; the Louisville Bridge Company, 400 tons for the Louisville & Nashville; the Hinkle Iron Company, 500 tons for a theatre on First street, near Second avenue, New York; the New England Structural Company, 400 tons for the alterations to the elevated structure of the Boston Elevated Railway at Sullivan square, and George W. Jackson, Inc., 400 tons for the changes to the Chicago Elevated loop. The 800 tons for the factory building of the Pingree Company, Detroit, has also been placed, and it has been confirmed that the Eastern Steel Company, through the Hay Foundry & Iron Works, will furnish the 3000 to 3500 tons of plain material for the Corn Building on Madison square, New York. Bids go in December 15 on the Harlem prison to be built at Wingdale, N. Y., which will probably require 3000 to 4000 tons. The Pennsylvania Railroad received bids last Saturday on 1500 tons of bridge material for its New York division, but no decision has been reached, and also has in the market a small bridge in New Jersey requiring about 300 tons. Still in the market are 12,000 tons for the Norfolk & Western, 2500 tons for the Virginian Railway, and 6000 to 8000 tons for the Sloane Building. Prices remain unchanged: Plain structural material, plates and steel bars, 1.56c. to 1.61c., and bar iron, 1.45c. to 1.50c., all New York. Plain material from store, New York, 1.85c. to 1.95c.

**Cast Iron Pipe.**—The local market has developed no features of special interest. Contracting for delivery next year continues, and some of the business thus closed up has been of some little importance. No public lettings of consequence are in sight outside of that by the city of New Bedford, Mass., which will be made December 8. The demand for early delivery has naturally subsided to very small proportions. Carload lots of 6 in. are quoted at $22 per net ton, tidewater.

**Old Material.**—It is a rather striking comment on the dullness in the scrap trade to remark that stove plate has been in better demand from consumers than any other class of old material. All other grades are almost completely neglected. Some little interest, however, attaches to the fact that a few of the dealers appear to be picking up such lots of wrought scrap as they can secure from other dealers

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at attractive prices. Dealers' quotations per gross ton, New York and vicinity, are as follows:

| | |
|---|---|
| Rerolling Rails | $10.50 to $11.00 |
| Old girder and T rails for melting | 10.00 to 10.50 |
| Heavy melting steel scrap | 10.00 to 10.50 |
| Relaying rails | 20.50 to 21.50 |
| Standard hammered iron car axles | 22.50 to 23.00 |
| Old steel car axles | 16.00 to 16.50 |
| No. 1 railroad wrought | 12.50 to 13.00 |
| Wrought iron track scrap | 11.50 to 12.00 |
| No. 1 yard wrought, long | 11.00 to 11.50 |
| No. 1 yard wrought, short | 10.50 to 11.00 |
| Light iron | 5.00 to 5.50 |
| Cast borings | 5.50 to 6.00 |
| Wrought turnings | 5.50 to 6.00 |
| Wrought pipe | 9.50 to 10.00 |
| Old car wheels | 12.00 to 12.50 |
| No. 1 heavy cast, broken up | 11.50 to 12.00 |
| Stove plate | 9.50 to 10.00 |
| Locomotive grate bars | 8.50 to 9.00 |
| Malleable cast | 12.00 to 12.50 |

## Iron and Industrial Stocks

NEW YORK, December 7, 1910.

The period since last week's report has been one of almost continuous liquidation. Too many discouraging influences have recently developed to enable the stock market to maintain the position of strength which it assumed the greater part of last month. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week has been as follows:

| | | | |
|---|---|---|---|
| Allis-Chalm., com. | 8⅛ - 8¾ | Pressed St., pref. | 94 - 96 |
| Allis-Chalm., pref. | 27½ - 31 | Railway Spr., com. | 30½ - 33½ |
| Beth. Steel, com. | 28¾ - 31½ | Railway Spr., pref. | 95⅝ - 96 |
| Beth. Steel, pref. | 57½ - 61¼ | Republic, com. | 30⅝ - 33¼ |
| Can. com. | 9 - 9¾ | Republic, pref. | 93½ - 96½ |
| Can. pref. | 75½ - 79 | Sloss, com. | 49 - 50½ |
| Car & Fdry, com. | 48 - 52¼ | Pipe, com. | 15⅞ - 16¼ |
| Car & Fdry, pref. | 114 | Pipe, pref. | 55½ |
| Steel Foundries | 40¾ - 45¼ | U. S. Steel, com. | 71⅛ - 77⅞ |
| Colorado Fuel | 29⅞ - 32⅝ | U. S. Steel, pref. | 115 - 117¾ |
| General Electric | 149½-152¾* | Westinghouse Elec. | 65½ - 69⅝ |
| Gr. N. ore cert. | 54½ - 58⅝ | Am. Ship, com. | 78 |
| Int. Harv., com. | 108½-111 | Chi. Pneu. Tool | 40¼ - 41¼ |
| Int. Harv., pref. | 121¼-121¾ | Cambria Steel | 42⅞ - 43½ |
| Int. Pump, com. | 39¼ - 43⅝ | Lake Sup. Corp. | 26½ - 27⅞ |
| Int. Pump, pref. | 83½ - 85 | Pa. Steel, pref. | 103 |
| Locomotive, com. | 35½ - 38¾ | Warwick | 10¼ - 10½ |
| Locomotive, pref. | 105 - 105⅞ | Crucible St., com. | 12 - 12⅝ |
| Nat. En. & St., com. | 17⅛ | Crucible St., pref. | 76⅝ - 78½ |
| Pitts. Steel, pref. | 100 - 101 | Harb.-W. Ref., com. | 32½ - 32¾ |
| Pressed St., com. | 29 - 31¾ | Harb.-W. Ref., pref. | 95 |

* Ex dividend.

**Dividends.**—The Crucible Steel Company of America has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable December 24.

The American Can Company has declared the regular quarterly dividend of 1¼ per cent. on its preferred stock, payable January 2.

## Notes on Prices

**Rope.**—Thus far during the month the demand has shown no increase over November. The following quotations represent prices to the retail trade in the Eastern market for rope 7-16 in. in diameter and larger, with card advances for smaller sizes: Pure manila of the highest grade, 8¾c. to 9¼c. per pound; second grade manila, 7¾c. to 8¼c. per pound; hardware grade, 7¼c. to 7¾c. per pound; pure sisal of the highest grade, 6¾c. per pound; second grade, 6¼c. per pound; jute rope, ¼-in. and up, No. 1, 5¾c. to 6¼c. per pound; No. 2, 5¼c. to 5¾c. per pound.

**Linseed Oil.**—A new feature has been introduced into the linseed oil situation since prices have been so high; that of the importation of European oil and Argentine flax seed in sufficient quantities to affect the domestic oil market. Seed is arriving at Northwestern points in comparatively small quantities, much of which has been contracted for. The future of the American oil market is regarded as dependent largely upon the outcome of the Argentine crop now growing. It is thought possible that oil may temporarily drop to near the 90c. mark and that under adverse conditions it may reach $1.25 before September, 1911. Argentine seed is being depended upon for the May deliveries in this country. Lack of demand will probably continue until February, which is the usual normal condition during this period. The oil market is not strong under present conditions. The following quotations represent New York prices in five-barrel lots or more:

| | Cents. |
|---|---|
| State, raw | 95 |
| City, raw | 95 |

Linseed, in lots less than 5 bbl., 1 cent advance per gallon.
Boiled oil, 1 cent advance over raw.

**Spirits Turpentine.**—The market has fluctuated during the week. Large buyers were not in evidence to any extent, evidently expecting lower prices. Consuming manufacturers who use turpentine in their product are preparing for their annual inventory and repair. Comparatively little turpentine is being used for painting, so that business is quiet. The present crop of turpentine has nearly all reached market and some look for a stronger market after the turn of the year. New York quotations in 5-barrel lots are as follows:

| | Cents. |
|---|---|
| In oil barrels | 78 |
| In machine barrels | 78½ |

Less than 5-bbl. lots, ½ cent advance per gallon.

## New Tools and Appliances

**Universal Angle Gauge.**—The E. G. Smith Company, Columbia, Pa., is bringing out a new universal angle gauge which is simple in construction and free from parts likely to become disarranged. There are only four parts to the gauge, two straight edges and the two curved links that connect them. All three joints between the straight edges and the links are pivots, so that the former may be placed at any angle relative to each other. Thus the gauge may be used as a protractor, bight, gauge, square and in various other ways.

**New Monarch Engine Lathe.**—A 16-in. engine lathe has recently been added to its line by the Monarch Machine Company, Sidney, Ohio, which is equipped with double back gears having ratios of 5 to 1 and 9 to 1, that are operated by a conveniently located lever. The headstock is reinforced by ribbing and has a three-step cone pulley. The range of feeds, which can be either of the belt or the positive geared type, is sufficient to cover all the requirements met with in practice. High carbon hammered crucible steel is used for the spindle, which runs in bronze bearings. An offset tailstock is employed which enables the compound rest to be swung parallel with the bed. The bed is extra heavy and deep and is reinforced by webs spaced 19 in. apart. The carriage and apron are of the customary type and the compound rest has ample bearing surfaces and taper gibs for taking up wear. The steel rack is made in one section and the pinion meshing with it can be disengaged when cutting screws. The swing over the bed is 16 in. and over the compound rest 10 in. The maximum distance between centers is 34 in. with a 6-ft. bed. A taper attachment can be furnished as an extra, as the lathes are drilled to receive it.

**A Universal Graduating Machine.**—A graduating machine in which the work is placed in position, the machine started and automatically stopped when the piece is completed is the latest product of the Modern Tool Company, Erie, Pa. Two sizes of machine are built; one for small work such as straight and curved scales, surveying instruments, gun sights, &c., and the other with the work end of the base arranged to rotate fixtures or brackets for holding heavy milling machine saddles, curved scale work, faces or edges of disks and taper dial or drum work. Accurate adjustments can be made in all parts and any desired width of spacing or length of line can be secured.

**Automobile Street Sweeper.**—An automobile street sweeper has been brought out by the Monette Street Cleaning Machinery Company, Inc., 320 Broadway, New York City, which travels on four wheels, the brush being located between the two axles, while an apron picks up the dirt delivered to it by the brush and carries it to a number of cans in front, which are removed when filled. Only one man located at the rear of the machine is needed to drive the sweeper and control all the appliances. The special feature of the machine is a combination of vibratory and rotary motions which makes the action of the brush very similar to that of a hand broom. Rotary motion alone, it is claimed, will cause the dirt when damp to cling to the bristles of the brush and clog them, but the vibratory motion picks up the dirt and tosses it upon a belt which carries it away, thus keeping the broom clean. The power for operating the sweeper is furnished by an 18-hp. engine,

and it is claimed that the sweeper will do the work of three two-horse sweepers, a sprinkling cart and a dozen men.

**Gas Brazing Forge.**—A new brazing forge which differs from those now on the market principally in the construction of the operating treadle, has been designed by J. L. Lucas & Son, Bridgeport, Conn. The treadle is hinged from the rear of the forge and has two connecting rods extending to the gas and air valves. Normally the treadle is raised by a spring connected to the under side of the table, and in this position the air and gas valves are open to the extent of their adjustment, but when pressure is applied to the treadle the gas is reduced to a pilot light. A latch near the bottom of the leg adjacent to the treadle serves to hold the latter down when the operator desires to leave the machine. This arrangement makes it possible to leave the gas turned on during the intervals between jobs, when adjusting and changing work or performing other work, but the gas need not be left burning. This feature has given the forge its name of the Gas Saver forge Both single and double torch styles are made.

**Small Saw Sharpener.**—A smaller size of grinder for sharpening the saws used in its cutting-off machine is being made by the Cochrane-Bly Company, Rochester, N. Y., which is practically the same in its construction as the company's regular grinder. The demand on the part of users of small cutting-off machines for a moderate priced grinder capable of sharpening their saws led to the design of this new type.

**Variable Speed Planer.**—To enable different rates of speed to be employed for working various metals and also for the cutting and return strokes in the same metal, the Hamilton Machine Tool Company, Hamilton, Ohio, has developed a very simple and compact planer drive. Any one of four cutting speeds is available while the return is at a constant speed, the variation being secured through four pairs of gears controlled by one lever, which enables the change from one speed to another to be made quickly and prevents conflicting gears from being thrown in at the same time. Power is transmitted from the pulley shaft to the first speed changing shaft by a rawhide gear and the speed changing gears run at comparatively slow speed, thus preventing unnecessary wear and producing smooth running. The drive is located on the bed instead of the housings, which protects the gears but at the same time renders them readily accessible. Each machine has an index plate, showing the different speeds provided and the proper location of the levers for each, attached.

**Portable Grinding Pan.**—A 42-in. pan which is similar in design to the large stationary pan made by the same company has been placed on the market by the Thomas Carlin's Sons Company, 1918 Henry W. Oliver Building, Pittsburgh, Pa., to meet the demands for a small grinding and mixing pan in chemical works, laboratories, iron foundries, &c. The frame, bottom and the gears are of iron, while the roll tires and bottom plates are of hard white iron to resist wear, and the large diameter vertical shaft is of cast steel and runs on bronze and steel washers. In ordinary service from 5 to 7 hp. is required to drive the pan, which weighs 3800 lb.

**A New 32-In. Upright Drill.**—A drill press especially designed for handling automobile parts and for use in railroad shops has been brought out by the Superior Machine Tool Company, Kokomo, Ind. This tool has a compound table with both cross and longitudinal adjustments, and the feed screws for these have dials graduated in thousandths of an inch. The working surface of the table is 18 x 36 in., the overall dimensions being 20 x 40 in. It is supported by an adjustable screw that rests on the base. The arm is of heavy design and has a very large bore for the table.

**Roll-Over Molding Machine.**—There has been developed by the Detroit Foundry Supply Company, Detroit, Mich., a new roll-over molding machine known as the Grimes' machine. This is a simple standard machine, requiring only a little floor space and is perfectly balanced, as the center of gravity is the center of rotation. It is claimed that with the small handwheel used it is possible for one man to turn the largest flask smoothly and without jerk, as the pattern is drawn by an absolutely straight gravity drop. The maximum size flask handled by this machine is 24 x 36 x 12 in., the last being the depth.

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**The Pittsburgh Steel Company's New Blast Furnaces.**—The Pittsburgh Steel Company, Frick Building, Pittsburgh, with rod, wire and wire nail mills at Monessen, Pa., has definitely decided to build two blast furnaces at Monessen to supply the company with basic pig iron for its open hearth department, which contains 12 60-ton furnaces. It is the intention to use direct metal, which will effect quite a saving over the present practice that involves remelting pig iron largely purchased from the Shenango Furnace Company of Pittsburgh and M. A. Hanna & Co., of Cleveland, Ohio. It is understood that Julian Kennedy, Bessemer Building, Pittsburgh, will be consulting engineer for the erection of these two furnaces.

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The Republic Iron & Steel Company, Pittsburgh, Pa., has contracted with the Westinghouse Electric & Mfg. Company for 79 crane and mill motors, aggregating about 5000 hp., to be used in mills at Youngstown, Ohio. The contract also includes magnetic controllers for the larger motors and manually operated controllers for the smaller motors.

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The report that the Westinghouse Electric & Mfg. Company would erect a five-story building at East Pittsburgh for the manufacture of automobile equipment is untrue. The company at present has no extensions to its plant under way or contemplated.

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By a sweeping majority, San Francisco has authorized the $5,000,000 city bonds for the Panama-Pacific International Exposition, thus making a total of $17,500,000 which has been raised in San Francisco and California for this fair in 1915.

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Sand-chilled and semi-steel rolls for use in various industries have formed a very important item this season in the sales of the Youngstown Foundry and Machine Company, Youngstown, Ohio, which is gradually extending this branch of its trade.

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The American Automobile Mfg. Company, whose head office is in the Lincoln Bank Building, Louisville, Ky., has purchased a large plant at New Albany, Ind., and will begin to build automobiles there about January 1.

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The Nickelized Casting Company, Pittsburgh, now has its nickelized chilled wheels in service on several of the leading railroads of the country, with very satisfactory results.

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The Pressed Steel Mfg. Company has removed its offices from the Bourse to suite 504 Land Title Building, Chestnut and Broad streets, Philadelphia.

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The Bethlehem Steel Company put its C furnace at South Bethlehem, Pa., in blast December 2, making five furnaces now active.

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The Jackson Iron & Steel Company, Jackson, Ohio will blow out its furnace some time next week.

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The population of Duluth, Minn., is 78,466, an increase of 60 per cent.

# The Machinery Markets

Inquiries that give promise of good business are coming into the machinery trade in good volume, but there is very little doing in the way of actual orders. In Pittsburgh there is considerable purchasing of a miscellaneous character, and in Cleveland dealers note a better volume of business. In the Farther Central West a great deal of construction work is going on and the demand for outdoor equipment is good in that territory. On the North Pacific Coast and in the Southwest the call for equipment is good and a better business is looked for at the beginning of the year. In other territories business is marking time and no actual rush of trade is looked for until after the first of the year.

## New York

NEW YORK, December 6, 1910.

There is very little doing in the New York machinery market. Dealers are busy in filling orders placed within the last few weeks, but new orders are few. Inquiries are coming into the market in small volume and there seems to be an absence of new enterprises. All things considered, the machinery trade is not in a very encouraging condition, but it is thought that after the first of the year, when many of the smaller manufacturers get their inventories made up, business from that source will begin to improve. During the last week machinery houses have been doing more or less of a pick-up business, selling a machine here and there, but there is nothing in the shape of a list of tools before the trade at this time.

Writing under date of November 24, our Berlin correspondent makes the following report of trade conditions in Germany: "A meeting of the Society of German Machine Tool Builders was held in Berlin recently, and a statement was issued indicating that shops are pretty well employed. It is added that there is a heavy demand for machine tools, both from the home market and from abroad, and that stocks on hand have been materially reduced. The belief was expressed that it would soon be possible to bring prices more into harmony with the cost of production, but it was admitted that American competition, particularly in machines of medium sizes, was making itself keenly felt in Germany and was unusually sharp in neutral markets. In order to meet this competition it was recommended that the shops devote their attention to a few standard sizes, like the American system, rather than try to produce all sizes and styles of machines under one roof."

The McKinnon Chain Company, Buffalo, N. Y., is erecting a new plant at St. Catharines, Ont., which will be 80 x 300 ft. and one story. The building will be equipped largely with special chain making machinery.

The Curtiss Aeroplane Company has been incorporated, with headquarters at Hammondsport, N. Y. The company has a capital stock of $20,000 and it intends to build aeroplanes and similar apparatus.

The Philadelphia Quartz Company, Chester, Pa., will build an extensive branch plant at Buffalo, N. Y., for the manufacture of silica of soda. The new plant with equipment will cost about $100,000 and will be located on a 5-acre site at the crossing of the Pennsylvania Railroad and the Buffalo Terminal Railroad, just east of the city line, adjoining the transformer station of the Niagara Falls, Lockport & Ontario Power Company. Considerable crushing and grinding machinery will be required for the equipment of the new plant. The present Massillon, Ohio, branch of the company will be abandoned upon the completion of the Buffalo plant.

The Defiance Paper Company, Niagara Falls, N. Y., is receiving bids for construction of its new plant on Second street, which will include considerable steel work.

The Crouse-Hinds Electric Company, Syracuse, N. Y., has completed plans for a new manufacturing plant, comprising six buildings, one and three stories, brick and structural steel construction, which it will erect on Wolf street at an estimated cost of $200,000.

The Larkin Company, soap manufacturer, Seneca, Larkin and Van Rensselaer streets and Erie Railroad, Buffalo, N. Y., Jno. D. Larkin, president, 663 Seneca street, is receiving bids for a 2000-hp. plant elevator, equipment and steam heating plant. Alternating motors from 5 to 50 hp., transformers, ammeters and switchboard will be required.

Plans for the new power house for the State Capitol at Albany have been completed and have been approved by the Trustees of Public Buildings. The new building will be of face brick and terra cotta on stone base, with tile and copper roof, and will cost approximately $500,000. It will be located on North Hawk street and will supply heat, power and light to the Capitol Building and also to the new Educational Building, through concrete conduits 8 ft. in diameter. The boiler room will be of sufficient capacity for 10 380-hp. boilers, a total of 3800 hp., and the engine room of size to contain five engines and dynamos of 1700-kw. capacity. The initial installment is to be eight boilers and four engines and dynamos. An overhead coal pocket of 1000 tons capacity will also be installed. Bids for equipment will be advertised for after January 1. Franklin B. Ware is State Architect, Albany, N. Y.

The H. D. Taylor Company, Buffalo, N. Y., is building a three-story brick addition, 66 x 75 ft., to its factory and warehouse for saddlery goods at 105-111 Oak street.

Murphy & Ronan, carriage builders, Albany, N. Y., will erect a new factory building on North Broadway.

A gravity system of water works is to be built at Oriskany Falls, N. Y., including a 13,000,000-gal. reservoir with concrete dam. The work will call for approximately 25,000 ft. of 12, 10, 8 and 6 in. cast iron pipe, 37 hydrants and 36 valves. Bids will be considered for the entire work only and will be received by the Board of Village Trustees, G. J. Pollard, clerk, until 2 p.m. December 22. A. M. Scripture, New Hartford, N. Y., is engineer.

The Aluminum Specialties Mfg. Company has been incorporated at Fulton, N. Y., to manufacture aluminum specialties. The incorporators are T. S. Jackson, G. H. Spitzle of Utica, N. Y., and Jno. R. Sullivan of Fulton.

The Ingle Machine Company, St. Paul street, Rochester, N. Y., has increased its capital stock from $10,000 to $70,000.

The Contractors Casting & Machine Company, Buffalo, N. Y., is adding to its foundry plant at Hertel avenue and the Erie Railroad a building 140 x 140 x 30 ft. in hight, with wings 40 x 50 x 15 ft. and 15 x 50 x 15 ft. in hight, a portion of the increased space to be used for chipping room purposes.

The Electrode Company, Niagara Falls, N. Y., has construction well under way on its new plant on Buffalo avenue.

The Spinella Corset Company, Niagara Falls, N. Y., has purchased a large tract of land at the north end of the city and will early in the spring commence the erection of a large manufacturing plant.

## Chicago

CHICAGO, ILL., December 6, 1910.

Machinery dealers in Chicago are encouraged by a larger volume of inquiries, and while a great deal of the business pending will not be closed until after the first of the year the waiting period is growing shorter. The demand is well distributed and general in character, coming from small as well as large shops, and if dealers had the volume of automobile business that was being done a year ago things would be really above the average. On figuring up their returns for the year most of the dealers find that they have made a fair showing as compared with former years, and in some cases they have exceeded recent years in the amount of their sales. Since July the trade has been quiet and has run below the average, but the figures for the year will not look so bad when they are footed up. Slow collections have had a depressing effect on the atmosphere in the machinery district, as the dealer does business on a small margin of profit and his capital is soon tied up when many of his customers take longer than the usual time to pay for their goods, especially when they do not give notes or paper that can be discounted.

The railroads are due to place large orders in the near future for cars and miscellaneous equipment. Their purchases of cars the past year have been less than the number required for replacements, and they have not bought any for six months. Their general buying of miscellaneous equipment has also been very light in the last six months. The equipment manufacturers are good buyers of tools, especially forge shop equipment, and when their business picks up they will undoubtedly appear in the machine tool market as liberal buyers.

The Lincoln Ice Company, Chicago, has leased for a period of 99 years the property at the southeast corner of Carroll avenue and Elizabeth street, on which it will begin at once the erection of a plant for the manufacture of artificial ice.

The Western Steel Car & Foundry Company, Old Colony

# THE MACHINERY MARKETS

Building, Chicago, has under consideration extensive improvements to its plant at Hegewisch, Ill., which will include the erection of a number of additions to its present plant.

The J. L. Clark Mfg. Company, Rockford, Ill., tin boxes and cans and metal specialties, is erecting a new factory building, 181 x 198 ft., one story, of brick, concrete and steel construction, with saw-tooth roof. The equipment of the building will be modern in every detail, and the building is arranged with a view to giving the best possible light. Contracts for practically all of the equipment required have been let.

The Meadows Mfg. Company, Meadows, Ill., is preparing to move to Pontiac, Ill., where it will occupy a large factory building which has just been completed. In its new location the company will have better shipping facilities.

The Dickerson Mfg. & Supply Company, Clinton, Ill., has been incorporated with $200,000 capital stock, fully paid. The company will manufacture a water gauge for steam boilers of all kinds, locomotives, marine and stationary, invented by Charles L. Dickerson, president of the company. A location for a manufacturing plant has not been decided upon as yet, as the company intends to contract for the manufacture of the gauge for some time.

The Bartholomew Company, Peoria, Ill., automobiles, is erecting an addition to its factory, 60 x 100 ft., of fireproof construction. The company has also about completed a 20 x 90 ft. steam heated garage, with sliding doors on the front side which permits the machines to enter at any place. A number of new machine tools have recently been installed by the company.

The W. R. Howell Company, Geneva, Ill., has decided to rebuild its plant there, which was recently destroyed by fire. The contract for the erection of the new plant has been let and operations will be started at once. Details of equipment to be purchased have not been decided upon.

## Philadelphia

PHILADELPHIA, PA., December 6, 1910.

Business still drags. There has been no demand for machine tools from the railroads. While car and locomotive orders have been somewhat better, there is still an absence of any tool lists for 1911 from the railroads in this district. Builders of tools, both of the standard and special types, report the demand as quite irregular. A few sizable orders are in sight. The demand for second-hand machinery, tools, engines, &c., has been less active. Very little new business for export shipment has come out; what little there is has been largely confined to special equipment.

Estimates on revised plans are being asked for the erection of the seven-story garage and service building, 71 x 164 ft., of steel, concrete and brick, which the Packard Motor Car Company proposes to erect at Broad and Wood streets.

Fire partially destroyed the foundry of the Macungie Stove Foundry, Macungie, Pa., November 23. Particulars as to the loss entailed and plans for rebuilding the plant are not available.

The Reading Iron Company is installing a small gas producer at its Scott Foundry for use in connection with experimental work. This company has just shipped a large sugar mill to Porto Rico, which is the largest it has ever built; it is 18 ft. high and 130 ft. long, and weighs complete about 700 tons.

Frank Toomey, Inc., has purchased the property of the Mora Car Company, Newark, N. Y., from the receiver, the sale being approved by the courts. Possession has been taken and the plant will be maintained in operation to complete the manufacture of automobiles, for which materials and parts are on hand. It is the intention of the purchaser to resell the plant.

The Baldwin Locomotive Works has received orders for 15 locomotives from the Cincinnati, Southern & Texas Railroad Company, as well as scattered business from other railroads and industrial concerns. Several large contracts are under negotiation. This company is now fairly busy, carrying a total of 16,000 employees on the rolls at its local and Eddystone plants. The outlook for business is considered fair, but it is thought likely that the bulk of the contracts placed will be for moderate numbers of locomotives.

The Salisbury Marine Construction Company, Salisbury, Md., has taken over the Marine Railway, formerly operated at that place by Lloyd & Williams, and is engaged in rebuilding and modernizing the plant so as to enable it to build pleasure and commercial craft up to 150 ft. The buildings being erected include a boat shop, 70 x 120 ft.; joiner shop, 45 x 50 ft., two stories; machine shop, 20 x 25 ft.; store house, power house and office building. While a large part of the power and machine shop equipment is provided for, the company is still in the market for wood working machinery. R. D. Grier is president; Otis Lloyd, vice-president; R. H. Grier, secretary, and Lewis Morgan, treasurer. Catalogues referring to shipbuilding materials, supplies and furnishings are requested.

Alexander Brothers, manufacturers of leather belting, are having plans prepared by Bergdoll & Pawling for a six-story brick, steel and concrete factory building at 414 and 416 Third street, extending through and including four building fronts on Orianna street. These properties adjoin the firm's present plant. General information as to the requirements in connection with the proposed new factory are not yet available, but additional power equipment is to be provided.

## New England

BOSTON, MASS., December 6, 1910.

November was a disappointing month in the machinery trade, both with the manufacturers and the dealers. The totals of orders booked were less than those of October. In fact, the month fell well behind the average of the year. The situation is not without encouragement, however. Indications are that a satisfactory amount of industrial expansion, entailing the purchase of large amounts of new machinery, will have been completed before next summer. Announcements already made and plans still kept private indicate this condition. A considerable number of orders have been booked with the understanding that they will not be entered until January. With some of the manufacturers a noticeable increase in business has come during the last few days. One machine tool builder reports having received more business yesterday and to-day than during the whole month of November. Buyers are always slow to place business in December, because of the effect upon the inventory showing. In numerous cases the expression of opinion is that the low level of the depression has been reached and that improvement is to be looked for with the new year.

The United Shoe Machinery Company, Beverly, Mass., will continue the expansion of its great works. Factory B will be extended 200 ft., constituting a building 60 ft. wide and five stories high. A similar extension of factory A is nearing completion, together with an ell 80 ft. wide, which will connect with the proposed addition to factory B. Work on the foundations of the new building will begin this winter, and the structure will be made ready for its equipment in the spring. A large drop forge shop will also be built, but details are not yet completed. Tentative plans call for a building 300 ft. in length. The enlargements mean the purchase of large amounts of machine tools, forging and other equipment.

A transaction of large importance is the purchase of the property of the George Lawley & Sons Corporation at South Boston by the Boston Elevated Railway Company. The Lawley Corporation has purchased the idle plant of the Atlantic Nail Company, Neponset, Mass., and will convert the premises into a ship yard and marine construction and repair shops. The Elevated will create a great power plant at South Boston, where conditions are exceptionally favorable for the purpose, including harbor frontage for coaling sheds and docks. The power unit will be a very large one. The demands of the increasing electric lines, including the subways, elevated and surface systems, has outgrown power facilities, and the approaching completion of the Cambridge subway makes it imperative that immediate relief be afforded. The understanding is that the new plant will not only greatly increase the present power, but will replace certain existing units in order to secure greater economies.

The Trumbull Electric Mfg. Company, Plainville, Conn., manufacturer of electrical supplies, intends to make extensive additions to its works in the spring, but no details are at present available.

The H. B. Smith Company, Westfield, Mass., manufacturer of heating boilers, radiators and other heating specialties, has let the contract for several new buildings, which will largely increase the manufacturing capacity of the works. They will constitute parts of the South Side plant. A machine shop will be 100 ft. square and two stories, and a foundry building will be 100x245 ft., connecting with the present foundry. Both buildings will be of steel and brick. A wooden storehouse will be replaced by a steel frame building. A concrete core building, 80x100 ft., two stories, is nearing completion.

Additions to general manufacturing works in New England include the following: National Seat Novelty Company, New York, new factory at Hop River, Columbia, Conn., to manufacture chair seats from leather and paper pulp and other specialties; Rockfall Woolen Company, Rockfall, Conn., addition 48x80 ft., two stories; Robert D. Mason Company, Pawtucket, R. I., dyer and bleacher, addition 66x127 ft.

The new demurrage rules for New England have gone

# THE MACHINERY MARKETS

into effect, some important changes having been made in the original schedule. The time limit is decreased from that of the local rules, of 96 hours, to 48 hours, excepting lumber products, coal, grain and grain products, the time for which is extended to 72 hours. Certain other minor exceptions are made, under the usual practice, and, generally speaking, the new routine is that in vogue in other parts of the country.

The Standard Machinery Company, Providence, R. I., is putting out an extensive new line of reducing presses, some of them equipped with dial feed and capable of feeding two holes to each revolution of the press. A cam knockout is furnished for shell work. The smallest machine weighs 4300 lb. and the stroke varies from 6 to 12 in. It is also built back geared, with balance wheel drive. The next size weighs 6400 lb., with stroke to 16 in. It is back geared, with single train of gears and balance wheel. The third size weighs 10,000 lb. and has double train, cut gearing and friction clutch, together with balance wheel. The gearing gives a ram speed of 8 to 10 strokes a minute, while in the smaller sizes the ram speed is 28 to 40 per minute.

## Cleveland

CLEVELAND, OHIO, December 6, 1910.

Local machine tool dealers are getting a somewhat better volume of inquiries than a few weeks ago, but orders are coming out rather slowly. Dealers are encouraged in the fact that there is more business in prospect than for some time. In many cases, however, recent inquiries are from concerns that are figuring on installing some additional equipment, but will not place their orders until after their annual meetings shortly after the first of the year. Pending inquiries are mostly from larger concerns in various metal working industries. Sales reported during the week are mostly single tools in medium sizes. Railroad business is still limited almost wholly to an occasional single tool order. The demand for second-hand machinery shows some improvement, but is not very active. The general manufacturing situation remains about stationary. Most plants are running full time, but many have reduced their working forces somewhat. The feeling prevails that, while December will be a rather quiet month, business will open up in good shape after the first of the year.

The Damascus Brake Beam Company, which recently purchased the plant of the Cowing Engineering Company in Cleveland, is making quite extensive changes to the plant and some additions, making it adapted to the needs of the new owner. The company has moved its offices from the Citizens' Building to the plant, and it is expected that the latter will be ready for operation about January 1.

W. H. Knight, president of the Cleveland Gas Meter Company, has awarded a contract for the erection of a new plant, 40 x 51 ft., three stories. The plant will be equipped with stamping and other machinery.

It is reported that the Baltimore & Ohio Railroad Company will erect large repair shops at some point in Ohio, the location not yet having been decided upon. A number of cities will make efforts to secure the shops.

The Ford Plate Glass Company, Rossford, Ohio, will build extensive additions to its plant that will triple its present capacity. Fourteen new buildings of reinforced concrete, brick and steel will be erected at a cost of more than $1,000,000. Among the new buildings will be a machinery room, 190 x 1055 ft.; a power house, 70 x 160 ft.; boiler house, 60 x 192 ft.; machine and blacksmith shop, 60 x 200 ft.

The Northern Ohio Traction & Light Company, operator of an extensive traction system throughout northern Ohio, which for some time has had under consideration the erection of a large central power station to supply power for the entire system, has decided to build a $1,000,000 power plant in Cuyahoga Falls. It is stated that construction work will be started early in the spring. The company's offices are located in Akron, Ohio.

The One Minute Washer Company, Sandusky, Ohio, maker of washing machines, will begin the erection of a new brick and steel plant early next month, that will give the company considerably more capacity than the present plant. A site has been secured at Market and Warren streets.

The Bunting Brass & Bronze Company, Alliance, Ohio, is now in the market for foundry equipment, motors and generators, milling machines, air compressors, 5-ton crane and other small equipment for the new plant that it has under erection in Toledo, Ohio.

The American Tire & Rubber Company, Akron, Ohio, has commenced the erection of a new three-story plant. The company will make carriage and vehicle tires and mechanical goods and specialties. A 300-hp. engine will be installed.

## Cincinnati

CINCINNATI, OHIO, December 6, 1910.

The machine tool business is in better shape this week, and some firms who went over their records for November were surprised to learn that they had actually made a fairly good showing during that month. A few single tools have been bought by the railroads lately, but no purchases have been made on large lists known to be in the hands of executive officers. Included in recent orders are several for the larger sized lathes. Export business prospects are brighter, and it is hoped that the demand from this source will be sufficient to help out local manufacturers in bridging over the usual dull holiday season.

Manufacturers of valves and other engineering specialties report no let up with them, and they are looking forward to a very heavy business in 1911.

Joseph G. Steinkamp & Bro., architects, Mercantile Library Building, Cincinnati, are taking bids for the construction of a three-story brick and concrete building, to be erected at 120-122 East Eighth street for Thomas E. Kennedy. This building will be leased for light manufacturing purposes, but names of prospective tenants are not yet available.

Smith & Mills, machine tool manufacturers, are making a one-story addition to their plant on Spring Grove avenue, Cincinnati. This building will be 30x50 ft., and will be used to house a 100-hp. Miller gas engine to drive a generator for supplying light and current for the machine shop.

The R. A. Becker Varnish Company, Cincinnati, is contemplating an addition to its plant on Harrison avenue.

The Standard Oil Company has completed plans for some large additions to its plant and warehouses on State avenue, Cincinnati.

The R. K. LeBlond Machine Tool Company, Cincinnati, tendered its foremen a dinner on the evening of December 1. J. M. Manley, secretary of the Cincinnati Metal Trades Association, J. H. Renshaw of the Continuation School, and Superintendent J. A. LeBlond made addresses to the gathering, which were responded to by different foremen.

It is rumored that the Avondale Ice Company, Cincinnati, is having plans prepared for a $50,000 ice plant to be erected in Evanston suburb.

The Triumph Electric & Ice Machine Company, whose plant is in Oakley, has opened a Cincinnati office in the Fourth National Bank Building.

Sechler & Co., Cincinnati, contemplate making an addition to their carriage factory on Plum street.

Steinman & Meyer, Cincinnati, furniture manufacturers, will make a five-story addition to their plant on York street. Architect Martin Fisher has the plans in charge.

Alfred Hill, of Cincinnati, who is secretary of the Casey & Hedges Company, Chattanooga, Tenn., states that the press reports of his company's fire damage last week are very much exaggerated. Only a part of the old foundry building was destroyed and the fire will in no way hold up deliveries.

The Baldwin Forge & Tool Company, Columbus, Ohio, expects to have its new plant, now in course of construction at Parkersburg, W. Va., all ready for occupation by January 1.

The plants of the West Mfg. Company and the Ohio Metallic Specialty Company have been moved from Columbus to London, Ohio. Both of these companies manufacture hardware and metal specialties.

## Indianapolis

INDIANAPOLIS, IND., December 6, 1910.

The American Good Roads Congress is meeting at Indianapolis this week. One of the interesting features is the exhibit of road machinery and material, which is the largest yet shown at a national convention. There will be a large number of papers read on road construction and the progress of good roads legislation in the various States.

E. L. Anderson & Son of Union City, Ind., who bought the Anderson Carriage Mfg. Company's factory at Anderson, Ind., at receiver's sale, have organized and incorporated it under the old name, adding the prefix "the." The capital stock is $30,000. The directors are E. L. Anderson, T. B. Anderson, A. L. Colvin, C. E. Horn and William Gimbel.

The Terre Haute Malleable & Mfg. Company, Terre Haute, Ind., has increased its capital stock from $75,000 to $100,000. A. W. Wagner is president of the company.

The Calumet Car Company, which recently completed a new plant at Calumet, Ind., has as its first work the wrecking of 3600 box cars of the Chicago Great Western Railroad.

The S. G. Taylor Chain Company of Maxwell, Ind., will

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move its plant to Hammond. W. J. S. Woodall is superintendent.

The Kibbe-Workinger Foundry Company, Elkhart, Ind., has been incorporated with $25,000 capital stock to do a general foundry and machine business. The directors are O. E. Kibbe, Z. G. Kibbe and E. M. Workinger.

The Oolitic Operative Quarries Company, Clear Creek, Ind., has been incorporated with $25,000 capital stock to quarry stone. The directors are William Chambers, William Graham and Nat U. Hill, Jr.

The Roth Mfg. Company, Columbus, Ind., has changed its name to the Indiana Deep Well Pump Company. It manufactures a pitless pump, the invention of J. G. Roth.

## Milwaukee

MILWAUKEE, WIS., December 5, 1910.

Conditions affecting the local machinery market having shown considerable improvement within the past week or ten days, some of the manufacturers and dealers here are hopeful that there will be a gradual upward trend from now on, broken only by the holiday season. The course of buying is, however, so erratic that predictions on that point cannot be made with any degree of certainty. Season contracts continue difficult to close, even when substantial inducements are offered, and nearly all buying is done just prior to the time when material is required.

Rudolph Mueller, Milwaukee, is preparing to build a garage, with machine shop, 25 x 120 ft., on Fourth street, near Cedar.

It is reported from Two Rivers, Wis., that the Coneaut Mfg. Company, now of South Milwaukee, has purchased the factory of the Two Rivers Woodenware Company, and will remove to that place.

The Weber Mfg. Company may build a wood working plant in West Allis, Wis., but will not do so before spring.

A site has been purchased in West Allis., Wis., by the Standard Separator Company, Milwaukee, and plans decided upon for a manufacturing plant, 250 x 550 ft., one story. An electric power plant is also to be installed and the machinery in the works driven by means of motors. The company is now operating in leased quarters near the Reliance works of the Allis-Chalmers Company.

A notable installation of machinery was recently made in the Canadian Northwest by the Allis-Chalmers Company of this city for the Swanson Bay Forests, Wood Pulp & Lumber Mills, Ltd., at Swanson Bay, near Vancouver, B. C., where upward of $1,000,000 has been expended for a new timber cutting plant, pulp mill and forest holdings.

The Reliance Engineering & Equipment Company, Milwaukee, is looking for a new location for one of its clients, now manufacturing a heavy motor truck, 5 to 15 tons capacity, in a Western city. One of the requirements of the owners of the company is that a certain amount of local capital be invested in the enterprise as an evidence of the support of the community in which its plant is built.

C. W. Doubler, whose present address is given as Madison, Wis., has organized a company to acquire the Red Rock quarries in the vicinity of Darlington, Wis., and install improved machinery, including a crushing plant.

The People's Water, Light & Power Company has been organized at Mellen, Wis., to operate a public service plant.

The Rhinelander Iron Company, Rhinelander, Wis., has done a good business this year in the sale of both new and second-hand machinery. The market in the Northern districts of Wisconsin and Michigan is steadily broadening.

The Wisconsin Zinc Company will install a power plant and concentrating mill at its Winskill Mine, near Benton, Wis.

Preparations will be made at Menasha, Wis., shortly for the installation of additional power machinery at the city lighting and pumping plant.

A machine shop is to be built in Waupun, Wis., by Edward Van Loo in connection with a garage.

W. T. Bradley, Tomahawk, Wis., is organizing a company to erect a soap factory there. Electric power will be used.

A brewery, equipped with its own power plant, will be built in North Milwaukee, Wis., by the Home Brewing Company.

The Northwestern Steel & Iron Works, Eau Claire, Wis., states that during the past year it has added to its plant a large foundry and three new shop buildings, at the same time extensively increasing its equipment. Besides the Northwestern line of concrete machinery, it manufactures the complete output of several other large concrete machinery concerns, and states that it is in the market for manufacturing propositions of this kind at any time, having a floor molding capacity in the foundry of 15 tons per day, with pattern makers, molders and machinists especially skilled in this line.

The Mandt Wagon Company, Stoughton, Wis., has plans prepared which call for the remodeling of the entire plant, the demolition of the old frame structures erected by the late T. G. Mandt and the erection in their place of modern two, three and four story brick and steel buildings. It is expected that the rebuilding of the plant will be extended over a period of several years, as it is the intention of the company to keep the plant in continuous effective operation.

## Pittsburgh

PITTSBURGH, PA., December 6, 1910.

Considerable purchasing of a miscellaneous character has developed lately in consequence of building operations in this district, but there are few contracts of any size now being let, and the market is sustained principally by orders from other sections of the country. For the coming spring, however, an unusually large number of projects are already being mapped out, and for these the requirements in the way of machinery, both mechanical and electrical, will be quite heavy. A fair percentage of orders is likely to be placed soon after the holidays, but most of the buying will be done rather late.

The Holbeck Riverside Gas Power Company has been incorporated at Oil City, Pa., by John D. Smithman, H. H. Smithman, Joseph M. Jenckes, with $1,000,000 capital stock, to establish a plant for the manufacture of engines, compressors, boilers and tanks. Further details will be made public later.

A new high service pumping plant is to be installed by the Donora Water Works Company, Donora, Pa. The plans are in charge of Chester & Fleming, Pittsburgh.

The Oil City Boiler Works, Oil City, Pa., has been awarded the contract for two boilers of 300 hp. each, feed water heater, pump, &c., for installation in the power and pumping plant at Sharpsburg, Pa.

W. E. Hildebrand, Pittsburgh, heads the newly organized Pittsburgh, Steubenville & Wheeling Railway Company, which is preparing to build an electric traction line from Carnegie, Pa., to Chester, W. Va. The plans contemplate a large central generating plant located where fuel can be had at low cost, but the details have not thus far been worked out.

The city engineer of Youngstown, Ohio, will shortly submit plans for the proposed municipal power and electric lighting plant, and the matter is expected to be definitely acted upon this winter.

The Pittsburgh & Lake Erie Railroad Company has bought about 50 acres at Adelaide, Pa., between Pittsburgh and Connellsville, and will erect a modern timber preserving plant, which is to be operated by a company under the management of an engineer who has designed quite a number of such plants, and is an expert in that line of work.

The Industrial Engineering Company is a new Pittsburgh corporation.

The Four States Coal & Coke Company, Worthington, W. Va., is installing a heavy duty air compressor and will make other additions to its equipment before spring.

Considerably enlarged manufacturing facilities for the coming year are to be provided by the Penn Motor Company, Pittsburgh, which is now incorporated. The plans for the projected improvement have not yet been fully determined upon.

The Ligonier Stone & Ballast Company has been organized by A. K. Keltz and others of Ligonier, Pa., to operate quarries in that vicinity on an extensive scale, land for that purpose having been leased from the Cramer Coal, Coke & Stone Company, Cramer, Pa.

## Detroit

DETROIT, MICH., December 6, 1910.

During the past week there were a good many important developments, announcement having been made of various new enterprises which call for large expenditures for buildings and equipment, as well as material used purely for construction purposes. Bookings on this account will be made gradually within the next few months, as there is no longer the hurry which characterized previous operations. Few of the new companies recently organized expect to start manufacturing before April or May, and only additions to established plants, which are needed in fulfilment of present or expected demands on the business, will be rushed to completion.

The Cartercar Auto Company, Pontiac, Mich., will complete arrangements shortly for another machine shop building, 150 x 160 ft., which is needed in the extension of its plant.

The Muskegon Paper Box Company has been incorpor-

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ated to establish a manufacturing plant in Muskegon, Mich. F. A. and G. E. Scruby are interested in this enterprise, their present address being given as Grand Rapids, Mich.

It is stated locally that C. D. Widman, Detroit, has sold his furniture manufacturing business to the Voss Mfg. Company, Louisville, and that the plants will be consolidated in that city.

Three new shop buildings, each 40 x 80 ft., are to be erected at Elkhart, Ind., by the Crow Motor Car Company of that place.

It is reported from Niles, Mich., that the National Wire Cloth Company's plant will be enlarged to provide facilities for the consolidation with it of an Eastern plant manufacturing approximately the same line of goods. A merger of several such companies is also talked of.

A timber cutting plant, planing mill, shingle mill, &c., will be built at Tula, Mich., by the Tula Lumber Company.

Plans for a large quarrying, crushing and manufacturing plant, to be erected by the Michigan Limestone & Chemical Company at Calsite, Mich., are nearing completion. All of the contracts for material and equipment will be placed through J. G. White & Co., New York City.

Work is about to begin in Detroit on the erection of a new factory building for the Hale Motor & Machine Company.

A four-story factory building, approximately 60 x 260 ft., is to be erected by the Universal Motor Truck Company, Detroit, in accordance with contracts recently awarded. The details of equipment are now being worked out.

Construction contracts are about to be let at Muskegon, Mich., for an electric plant to be operated by the municipality, and the purchase of equipment will also be determined upon in the near future.

Reichel Bros., Marquette, Mich., are building a new saw mill there, and will be in the market for equipment at intervals between now and spring, although the principal details have been provided for.

Wm. Horner, Reed City, Mich., is arranging for the construction of a new factory building, 80 x 120 ft. The Hauser, Owens & Ames Engineering Company, Grand Rapids, Mich., is reported to be in charge of the plans.

The Packard Motor Car Company, Detroit, is putting on more men in its pattern making and foundry department.

A two-story factory building, 70 x 70 ft., equipped with new machinery, will be erected in Kalamazoo, Mich., by the Kalamazoo Sheet Metal Works.

E. M. Arnos, Olivet, Mich., who is connected with the college there, has organized a company to build a power plant by remodeling the local flour mill and equipping it with electrical machinery, water wheel driven. Bids on the apparatus needed will be taken up to December 20.

The Manistee County Electric Company, Manistee, Mich., is arranging for the construction of a large hydraulic power plant. The preparation of plans has been intrusted to D. J. Albertson, Kalamazoo, Mich.

## Toronto

TORONTO, December 3, 1910.

The features of the week's trade are pretty much those of the whole autumn season. Nearly all factories are working up to their full labor capacity. New business to keep plants going in future months may not be coming in in quite as strong volume as it was, but so far the outlook is encouraging. There is still a large amount of new capital to be used in constructive work, and there seems to be no hesitation on the part of British investors to buy new Canadian issues, so that, apart from the proceeds of the crops and the profits of business, there is money to spend on equipment.

The ratepayers of Gleichen, Alberta, have voted in favor of spending $30,000 on water works and sewerage improvements.

Tenders, to be in by January 3, are being called for by A. Johnston, Deputy Minister of Marine and Fisheries, Ottawa, for the construction of a buoy depot, including the erection of a reinforced concrete wharf, power house, the installation of drainage and water systems, &c.

Up to February 1 tenders will be received by J. W. Breakey, secretary-treasurer of the town of Souris, Man., for the delivery next spring and summer of water pipes, hydrants, gate valves, valve boxes, pig lead, oakum, standard vitrified sewer pipe, &c., for the municipal water works and sewage system.

In January a by-law will be submitted to the ratepayers of Vancouver, B. C., to raise $200,000 on existing water works account. This is over and above the $600,000 estimate as required for the extension of the water works extension on the north. An agreement is practically arranged for the expending of $2,000,000 in South Vancouver by the joint municipalities. Of this sum $1,000,000 is to be on new water works account.

The City Council of Calgary, Alberta, is considering an expenditure of $50,000 upon a new incineration.

The R. McDougall Company, Galt, Ont., manufacturer of machine tools and pumps, is enlarging its works.

The Maximilian Pneumatic Tool Company has practically all the stock subscribed for its Woodstock, Ont., works. Orders for $5000 worth of machinery are being placed.

Canadian Explosives, Ltd., headquarters Montreal, has been incorporated by the Dominion Government with a capital stock of $15,000,000.

The Mexican Northwest Equipment Company, with a capital stock of $200,000, has received a charter of incorporation from the Dominion Government. The purpose of the company is to manufacture and deal in locomotives, cars and machinery and equipment of all kinds used in connection with railroads. The headquarters of the company are to be in Toronto.

The Ottawa Furnace Mfg. Company has decided to erect a factory in Calgary, Alberta.

A $500,000 water power development and pulp industry are to be undertaken on the Malbaie River, above Murray Bay, Que. A large force of men is at work upon the excavation of the ground that is to be the site of the buildings. The work is being done for the Canadian Power & Pulp Company, and the equipment is being attended to by the Bishop Construction Company, Montreal.

It is stated that the Dominion Steel Corporation's expenditure on new construction at Sydney, N. S., will amount to $1,500,000 in 1911.

The Canada Keg & Barrel Company proposes to locate in Orillia, Ont. Its works there would, it is said, employ from 80 to 100 hands at the outset.

The Canadian Carbon Company, Toronto, is arranging to start a branch factory in Winnipeg, Man., to cost $15,000.

The Canadian Pacific Railway Company has ordered five more 130-ton locomotives, to be built at its Angus shops in Montreal. They are to be used as pushers on the Rocky Mountain section.

The City Council of Chatham, Ont., has passed a by-law to provide the Western Bridge & Equipment Company with a site of 7 acres at a price of not more than $1500, and to give the company a fixed low assessment for 10 years. On its part the company is to build works at an outlay of $10-000 and spend at least an equal sum on its equipment. The ratepayers will vote on the by-law on January 2.

The Hydro-Electric Power Commission is now on the point of delivering power to London, Ont., where the city plant has been put in readiness to receive it. But manufacturers who have been using electricity there as supplied by the local company find they must change their motors. These are nearly all direct current motors, whereas alternating current is being supplied by the city. Upward of 300 motors of varying power will be taken out and new ones put in their place.

## St. Louis

ST. LOUIS, December 5, 1910.

Business is still quiet, although some of the dealers say they did fairly well on the whole for November. There are no specially good inquiries in the market, but there is a straggling demand from new manufacturing enterprises, which are starting up in considerable numbers.

The Commonwealth Steel Company continues making extensions, as required by its rapidly growing business on cast steel passenger car specialties.

The Duplex Adding Machine Company, St. Louis, has leased the three-story building at 1900-02 Morgan street, containing about 21,000 sq. ft. of floor space. The company will employ several hundred skilled mechanics for the manufacture of a simplified adding machine.

The Rogers-Conklin Mfg. Company, Joplin, Mo., announces that on November 14 the name of the company was changed to the Rogers Foundry & Mfg. Company.

The plant of the Roberts Cotton Oil Company at Jonesboro, Ark., was destroyed be fire November 28. The loss is estimated at $100,000.

The National Gas Machine Company, St. Louis, Mo., has been incorporated with $100,000 capital stock to engage in the manufacture of equalizing gas machines. The company will establish a factory at St. Louis. It has a full equipment of machinery and tools for the present, acquired from another concern, but will be in the market for new machinery and tools after the first of the year.

The Bayer Steam Soot Blower Company, St. Louis, Mo., is erecting a new factory building, 42 x 100 ft., of brick and concrete construction, for which all necessary equipment has been purchased.

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## San Francisco

SAN FRANCISCO, November 30, 1910.

The labor agreement recommended by the Arbitration Committee has not yet been adopted by the San Francisco metal working shops. No further attention is paid to labor troubles at outside points, and there seems to be a better undertone to the market. A few scattering sales have recently been made of large tools, and there is some further business in prospect, while the movement of small lathes, shapers, &c., is gradually improving. No large business with private firms is expected, however, during December, and there is little prospect of a general demand during the rainy season, though a little railroad business is coming out. Government inquiries are limited to a steam drop hammer and a wood planing machine for the Mare Island Navy Yard.

There is little new inquiry for wood working machines, and some of the sales which materialize are of less importance than was anticipated. Numerous lumber interests along the coast are making plans, however, for extensive improvements to be carried out next spring, and considerable activity is expected at that time. General factory equipment is in fairly active demand. Most of the salmon canning interests are planning improvements, and rumors have been started of a number of new canneries to be operated next year, which will require considerable new machinery.

Road machinery is regarded by local merchants as one of the most important and promising departments, as the State and many municipalities are working on large projects, and interest in this class of improvements is still increasing. Notwithstanding the beginning of the rainy season, numerous inquiries are still coming in for rollers, graders, &c.

In view of the large prospective requirements of Alaska and California gold fields, increased attention is given to dredging machinery, and considerable business is also coming up in dredges for general reclamation purposes. The Bucyrus Company has taken the contract for heavy machinery for the Feather River No. 4 dredge, being built at Marysville, Cal., for the Natomas Consolidated, and anticipates a number of other large orders in this territory within the next few months. Mr. Eels, president, and Messrs. Sweigert and Coleman, vice-presidents, of this company, have been visiting the San Francisco office for the past ten days.

A large electric motor has just been shipped to Honolulu for the Hawaiian Dredging Company.

Insurance interests have been making a careful investigation of fire protection equipment in California, and have recommended many improvements which are in most cases being provided for. Inquiries are coming out for fire engines, pumps and general water works machinery for all parts of the State.

The town of Palo Alto is figuring on an auxiliary water pumping plant and an automobile fire engine, and the town of Redlands is having estimates made on a high pressure water system in the business district. Los Angeles is in the market for a number of motor-propelled fire engines, &c. The city of Sacramento is figuring on two fire engines and an additional pumping unit for the water works, and the town of Holtville has taken bids on a new pumping station.

Henshaw, Bulkeley & Co., San Francisco, agents for Underwriter pumps, report a large demand for these machines recently, especially from factories and planing mills, many of which are figuring on additional installations next spring.

A number of large sales of electric and hydro-electric machinery have been closed during November, one of the largest being a 10,000 hp. plant for the Homestake Mining Company, Lead, S. D., which has ordered three Pelton impulse wheels, to be operated under a 660-ft. head, with Pelton governors, connected to Westinghouse generators. Another important order is that of the San Diego, Cal., Railway for a 3000-hp. steam turbine plant in two units.

The Edison Company, Los Angeles, has let contracts for a large power plant at Long Beach, Cal.

A Westinghouse generator and an 850-hp. Pelton-Francis turbine, to operate under a 1280-ft. head, have been ordered for the municipal plant of Brigham City, Utah.

The General Electric Company has taken a contract to supply transformers for the municipal plant at Palo Alto, Cal.

Plans have been accepted for a new municipal power plant at Lodi, Cal.

George Wingfield has secured extensive water rights on the Humboldt River in Nevada, and is preparing to install a large power plant to supply his Buckhorn mines.

The Hydro-Electric Company of California has ordered a 2500-hp. Pelton impulse wheel and Pelton governor to operate on a 680-ft. head and an Allis-Chalmers generator for its plant at Bodie, Cal.

Louis G. Henes, coast representative of Manning, Maxwell & Moore, reports the sale of a 15-ton crane for the Southern Pacific substation at Berkeley, Cal. A crane for the Oakland station has already been delivered.

The Llewellyn Iron Works, Los Angeles, has a contract for six freight elevators for the W. H. Perry Estate Building in that city.

W. T. Garratt & Co., pioneer brass founders of San Francisco, have leased a two-story and basement building to be erected at Fremont and Folsom streets.

The Richmond Light & Power Company, Richmond, Cal., is preparing for the complete reconstruction of its electric lighting plant.

L. R. Cady, who operates an electric light plant at Susanville, Cal., has placed orders with the Pelton Water Wheel Company and the General Electric Company for an additional unit.

The Honolulu Iron Works Company, Honolulu, T. H., is making a specialty of sugar mill machinery and is getting considerable foreign business in this line. Orders were taken recently for two large mills in Formosa, to duplicate others already installed by the company in Japan. It is reported that a great deal of development is projected for the Japanese sugar industry.

A. C. Stanley, San Jose, has purchased the Roseberry mining property near San Bernardino, Cal., and expects to place orders shortly for a 10-stamp mill and other machinery.

The Columbia Marble Company of this city is considering the installation of a Fort Wayne electric drill at its quarry.

F. S. Chapman and C. Chapman of Portland, Ore., are figuring on establishing a large saw mill in the vicinity of Klamath Falls, Ore.

A lively demand for small pumping plants for irrigation is reported in the agricultural district between Klamath Falls, Ore., and the California line.

A lot of new machinery is to be installed by the Globe Grain & Milling Company at Los Angeles.

Porterville, Cal., is having plans prepared for a water works system to be constructed at an estimated cost of $75,000.

## The Southwest

KANSAS CITY, MO., December 5, 1910.

The sale of machinery for a diversity of purposes, including mining and ore reduction, has recently been more active, and the outlook for the new year is most encouraging.

It is reported from Coffeyville, Kan., that the Coffeyville Foundry & Machine Company will enter extensively into the manufacture of gasoline engines. Considerable new equipment is to be provided for the purpose.

Bids are to be taken by Capt. D. L. Stone, Fort Sill, Okla., for installing a refrigerating plant in the army post there.

Improvements to be made by the Atchison, Topeka & Santa Fé Railway Company in this section include a welding plant at Shopton, Kan., and the installation of heavier tools at other points to take care of locomotive repairs.

A new manufacturing plant is to be built at Little Rock, Ark., by the Diamond Basket Company.

The Alamogordo Improvement Company, Alamogordo, N. M., which is constructing a hydroelectric power station in that vicinity, is planning the installation of a number of such plants to provide current for industrial purposes, thereby creating a market for motors in the communities which it serves.

It is reported from Silver City, N. M., that Boulware & Johnson of that place are in charge of plans for the installation of a hydroelectric plant of 3000 kw. on the upper reaches of the Gila River. Construction work will begin in the near future.

The L. J. Smith Locomotive & Equipment Company has recently been organized at Kansas City and acquired a plant on Fourth and Central streets. In addition to general repair work on locomotives, steam shovels and contractors' equipment of various kinds, the company will deal in such machinery, utilizing its facilities, when necessary, to put apparatus in good condition for resale.

Cleveland & Weatherhead, Silver City, N. M., are installing new machinery at the Deadwood mines, which are under their control, and will be in the market later on for additional equipment as development work progresses.

From Waco, Texas, it is reported that the Citizens' Railway Company will install a 1500-kw. steam turbine unit and has intrusted its selection to the National Light & Improvement Company, whose headquarters are in the Pierce Building, St. Louis, Mo.

The installation of a municipal water works system was recently decided upon at Coldwater, Kan., and the preparation of plans has been intrusted to an engineering firm in Kansas City. Machinery will not be purchased until after January 1.

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A substation, with equipment for the transmission and distribution of power, is being erected in Joplin, Mo., by the Southwest Missouri Electric Railway Company of Webb City, Mo.

The construction of an ore concentrating plant will be undertaken in the immediate future at Carl Junction, Mo., by the Homestake Mining Company, which has entered upon extensive development work there.

A bond issue of $20,000 for water works construction will soon be available at Miles City, Texas.

Ekman & Tolbert, Ada, Okla., have been engaged to construct water works at Allen, Okla., where a bond issue of $25,000 for the purpose was recently voted. The machinery equipment is reported to have not yet been purchased.

Following the installation of a pumping engine of 20,000,000 gal. capacity in the White Rock pumping station at Dallas, Texas, another of the same size will be purchased, although no definite time for doing so has as yet been set.

Improvements are to be made in the water works system at Okmulgee, Okla.

## The Northwest

ST. PAUL, MINN., December 5, 1910.

Among manufacturers and dealers in machinery all eyes are now turned toward the possibilities of the coming year, which promises exceptionally well for the sale of construction material, contractors' outfits, power equipment and industrial machinery, including foundry appliances, machine shop, boiler and tank making and fabricators' tools.

In the mining districts of South Dakota, Montana and Idaho there is also much figuring on new equipment, a considerable part of which is to be installed within the next two or three months. Development work everywhere is being more vigorously prosecuted than has been the case for a good many years, with the result that the houses supplying the trade have a great deal of business in prospect.

The Sioux Falls Light & Power Company, Sioux Falls, S. D., is adding largely to the capacity of its auxiliary steam power plant, and other improvements are to follow.

Material and equipment will be purchased at some time during the present winter for a water works plant at Townsend, Mont., the plans of which are now being prepared.

The project for a municipal pumping station and system of water distribution at Wayzata, Minn., which has been under consideration for some time past, will probably reach a favorable conclusion in the near future.

A new concentrating plant will be completed soon after the first of the year by the Hymalulu Mining Company, Mystic, S. D., which will henceforth be among the best buyers in that district of equipment and supplies.

Improvements which will probably involve the purchase of some new equipment will be made in the water works system at Tracy, Minn.

The electric light plant at Casselton, N. D., which was owned by B. A. Tenny, has been sold to Lloyd Lynch and Chester Hallet, who will remodel and operate it, with the probable purchase of some new equipment a little later on.

The authorities at Manhattan, Mont., are planning the construction of a water works system.

The Corbin Metal Mining Company, Corbin, Mont., is considering the erection of a concentrating plant and the extension of its operating machinery at the mine.

The Western Supply Company, Butte, Mont., has furnished a new air compressor and drilling outfit for the Black Friday Mining Company's operations at Radersburg, Mont., where electric motors will be used in place of direct steam drive, as at present, as soon as the necessary arrangements can be made.

A bond issue of $10,000 to cover the cost of a municipal pumping plant and water distribution system has been authorized at Morristown, S. D.

The Snowshoe Mining Company, Mullan, Idaho, will install an air compressor, motor driven, which has already been purchased. Other improvements are to be effected later.

Plans for a smelter will shortly be carried into effect by the Gilt Edge Maid Gold Mining Company, which controls a good producing property in Turner, near Deadwood, S. D.

A steam turbine set of 20,000 kw., new steel stacks, improved furnace equipment, &c., are being added to the main generating station of the Twin City Rapid Transit Company, Minneapolis, and other additions are expected to be made before spring.

The Crown Iron Works Company, Minneapolis, Minn., whose structural iron shop was recently destroyed by fire, will build a new fireproof building of brick and steel construction, 74 x 152 ft. The new shops will be equipped with a 10-ton electric crane, punches, shears and other necessary machinery and tools.

Lewiston, Mont., has estimates completed for rebuilding its water works system. The improvements contemplated will cost about $80,000.

## North Pacific Coast

PORTLAND, ORE., December 3, 1910.

Current trade in all lines is fair, with occasional spurts of buying that bring the aggregate volume of business up to a very satisfactory figure, all factors considered.

It is reported from Bellingham, Wash., that the Nooksack Valley Traction Company will soon begin the construction of an electric line north of that city, necessitating the purchase of considerable equipment and supplies.

The National Power Company, recently organized at Spokane, Wash., with headquarters in the Columbia Building, will undertake an extensive hydroelectric power development on the site of a small plant now in operation.

The Valparaiso Mining Company, Ketchikan, Alaska, is planning the installation of an ore crushing plant, with 10 stamps, early in the coming spring.

The gear cutting shop of the Portland Iron Works, which has been equipped with a gear planer, stated to be the only machine of its kind in the Pacific Northwest, is taking care of a heavy run of business, turning out mortise gears, bevel, spur or miter, of any description required.

The plant of the Oregon Door Company, Sellwood, Ore., is to be enlarged in the near future and some new machinery added.

The Lidgerwood Mfg. Company, whose sales offices for the north Pacific Coast are in the Alaska Building, Seattle, Wash., is placing its hoists, loaders, &c., very extensively through this section, and the prospects for the immediate future are most favorable.

The Hoquiam Machine Works, Hoquiam, Wash., is making a specialty this season of the Ideal logging tools which it manufactures. In these a large and growing trade has been developed.

Considerable equipment will be required by or before spring, and an ore reduction plant erected by the Dixie Meadows Mining Company, Prairie City, Ore., which was recently organized to take over the property of that name in the vicinity.

The planing mill of Savidge Bros. at Klamath Falls, Ore., is being enlarged and new machinery installed.

The City Council at Centralia, Wash., has decided upon plans for the installation of a complete electric power and lighting plant.

The authorities at Hermiston, Ore., have granted a franchise to B. A. & G. A. Chisholm to install an electric power and lighting plant.

The Bellingham Mfg. Company is planning an addition to the plant of the Western Sash & Door Factory, Bellingham, Wash., which it recently acquired. New machinery for making boxes, crates, &c., is to be installed.

The Hercules Steel & Iron Works has been organized in Portland, Ore., by E. W. Doane, L. G. Carpenter and G. H. Nicholai to operate a machinery building plant and do jobbing and repair work.

The authorities at Olympia, Wash., are preparing to start a vigorous campaign for the location of new industries, and as fast as the tide lands are filled in they will be utilized for free sites to be offered to manufacturers. Harbor improvements are also under way which will enable concerns building along the water front to have good shipping facilities by vessel.

The Washington Iron Works, Portland, Ore., recently made a large shipment of machinery to Manila for use in the Philippine Islands.

The plant of the International Lime Company, now under erection near Seattle, Wash., will be put in operation shortly after the first of the year. Electric drive is being installed throughout. This company will be a fairly constant buyer of equipment and supplies, with a large yearly aggregate of purchases.

The main offices of the Pacific Tank & Pipe Company have been removed to a new structure recently completed for the purpose at its factory near Kenton Station, Portland, Ore.

It is reported to be the intention of the Knob Hill Mining Company, Republic, Wash., to install an air compressor plant and add other equipment by or before spring.

The Washington Pipe & Foundry Company, manufacturer of metal and machine banded wooden stave pipe, which is stated to have the largest plant of its kind in the world, has had a liberal amount of business this season for the account of water works systems, power plants, fire service systems, hydraulic mining and general industrial purposes. The

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works of the company, with its principal offices, are in Tacoma.

A plant for the manufacture of sheet metal productions will be built in Spokane, Wash., by the Spokane Corrugated Culvert & Tank Company, recently organized there by H. G. Harrison of that place, in association with John S. Beall and C. A. Foster of Portland, Ore.

The preliminary work is now in progress on a new system of water supply for the city of Ellensburg, Wash.

The Riverside Portland Cement Company, Riverside, Cal., has plans prepared for the enlargement of its plant at Crestmore, which include the installation of two new kilns, three ball mills and two tube mills. Later on these improvements may be doubled. The company is also considering the erection of several buildings for handling and storing cement, and advises that it is particularly interested in reinforcing systems for concrete structures. Considerable new equipment will be installed.

The Lewiston-Clarkson Improvement Company, Clarkson, Wash., has completed plans for the improvement of its light and power system, to cost approximately $100,000. E. H. Libby is president.

## Farther Central West

OMAHA, NEB., December 5, 1910.

Despite the lateness of the season a great deal of construction work is still in progress, for nearly all of which buying of material and equipment has been prolonged beyond the usual period and will, in some cases, be carried through the winter. Thus the lack of business during the early fall is being somewhat compensated for at this time. From the general industrial field machinery and supply houses are also deriving a fair run of orders, mostly for prompt delivery. Few new projects have, however, been heard from lately, except as prospects for next spring, and the main support of the market must come from enterprises already established.

Preliminary preparations, involving arrangements for more power, are being made by the Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, for a 20-mile extension of its lines.

The city of Stuart, Iowa, has ordered from the Des Moines Bridge & Iron Company, Des Moines, Iowa, a steel tower and tank of 80,000 gal. capacity. Further purchases by the municipality will need to be made by or before spring, but their nature and extent have not been definitely decided upon.

The installation of a municipal pumping plant is proposed at Logan, Iowa, and will probably be undertaken in the spring.

The plant of the Des Moines Clay Mfg. Company, Des Moines, Iowa, will be largely extended and equipped with additional machinery.

It is reported from Bonaparte, Iowa, that S. E. Irish and others are organizing a company to build a hydro-electric plant. A concrete dam will be built and water turbines, electric generators, exciter units, transformers and power transmission apparatus installed.

The E. L. Watrous Mfg. Company, Des Moines, Iowa, has been very successful with its new process of hot galvanizing and tinning, known as the Watrous method, and an increase in its facilities will probably be called for in the near future.

Following development work now being prosecuted by the Clear Grit Mining Company, Leadville, Colo., under the management of C. J. Moore, considerable additional equipment will be required. A pumping unit has been installed at the 185 ft. level and adequate drilling machinery provided.

The South Omaha Stone Mfg. Company has been organized at Omaha, Neb., by Joseph H. Saunders and N. E. Carter to operate a stone finishing plant.

Jacob W. Young, J. M. Buckle and others have organized the Utah Plaster Company, Richfield, Utah, with a capital stock of $500,000, to establish a large plant for the manufacture of cement, plaster and similar products. Homer C. Bloom of Pittsburgh, Pa., is also reported to be interested.

The Horn Silver Mining Company, of which M. C. Morris, Salt Lake City is manager, will build a 75-ton ore reduction mill at Frisco, Utah.

Webster City, Iowa, is negotiating for a site on which it will erect a new power plant at a cost of $50,000, for which none of the equipment has been purchased.

The City Council of Olathe, Colo., is preparing to establish a water works system at a cost of $65,000.

The Waterloo Gasoline Engine Company, Waterloo, Iowa, is erecting an addition to its plant on Miles street, 52 x 300 ft. The company has recently installed two cupolas, one of which is constructed of reinforced concrete and was erected at a cost of $3000. Each of the cupolas has a capacity of 35 tons a day. The company has recently purchased a large tract of land across the street from its foundry, upon which it expects to erect a large building in the spring at a cost of $30,000.

The Johnson Biscuit Company, Sioux City, Iowa, has plans prepared for the erection of a five-story building, 100 x 150 ft., work upon which will be started early in the spring. The new building will be of brick and mill construction and will contain all modern improvements, including an air purifier, laundry, electric lighting plant, telephone system, fire sprinkler system, icing trolleys, sanitary ovens, cracker conveyors, cracker ovens and candy mixing and making machines. A considerable amount of the equipment has already been contracted for, but the engines, boilers and additional machinery to be installed have not been fully decided upon.

The Hastings Foundry & Iron Works, Hastings, Neb., is building a new plant composed of four buildings of steel construction. Upon its completion the company will move from its present location. The plant will be modernly equipped throughout and will be one of the most complete of its kind in the West.

The Peterson-Rerum Battery Company, Charles City, Iowa, has been incorporated, with a capital stock of $50,000. The company manufactures electric batteries and expects to build a large factory in the spring.

The W. T. Wood Company, Waterloo, Iowa, has been incorporated. The company will engage in the manufacture of wagons, farm trucks, tool grinders, gasoline engines, &c. W. T. Wood is president of the company.

## Texas

AUSTIN, TEXAS, December 3, 1910.

Industrial conditions in Mexico and along the Rio Grande border of Texas have not been disturbed by the recent sporadic revolutionary uprisings. American interests in Mexico are fully protected, and it is not feared that, even should the seditious movement against the existing government of that country become serious, which is very improbable, there would be any overt act committed upon American or other foreign holdings. The home seekers' movement to South Texas is growing in volume with the advance of cold weather in other portions of the country. Many of these newcomers invest considerable money in irrigating and other machinery, the demand from this source being unusually large.

Owing to the continued dry weather which has prevailed in Texas and almost the entire Southwest for the past two years, dealers report a large demand for well boring machinery. Numerous cities are short of water, and instead of depending on the surface supplies, have resorted to the digging of artesian wells. Fine water and in large quantities can be obtained at depths varying from 500 to 2500 ft., and well drillers and dealers in machinery of this character are being kept very busy.

The city of Dallas recently sold an issue of $650,000 worth of public improvement bonds. The bonds are divided for the purpose of making improvements to the water works system, for street improvement and for other public work.

The International & Great Northern Railroad is erecting reinforced concrete buildings at Taylor, Texas, for its car repairing shops, blacksmith shop, round house, store house and power house. It will also install air compressing machinery. The new shops will give employment to about 160 men.

The St. Stephen Land Company will construct a water storage reservoir and install a large amount of irrigation pumping machinery upon its property near Marfa, Texas.

S. M. Beverly and associates will erect a large plant at Pecos, Texas, for the manufacture of plaster cement and plaster of paris.

A cargo of 3500 tons of scrap iron was recently shipped from Galveston on the steamship Dora Baltea, destined for Italy.

D. D. Fairchild, Jr., of San Antonio and associates have applied to the City Council of Victoria, Texas, for a franchise to construct a street railway system there.

E. M. Ford will install an irrigating pumping plant near Leasburg, N. M. He will irrigate about 300 acres of land.

The Western Construction Company of Wichita, Kan., has submitted a proposition to the Chamber of Commerce of Douglas, Ariz., looking to the irrigation of about 10,000 acres in that section. The company purposes to install pumping plants and furnish water to the land owners.

The Sinaloa Land Company of Los Angeles, Cal., recently finished the construction of a system of irrigation upon its lands in the valley of the Culiacan River, State of Sonora, Mexico, at a cost of $250,000, gold. The company owns 3,000,000 acres. Interests identified with this com-

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pany will soon begin the construction of another irrigation system in the same section by which 75,000 acres will be watered. Large pumping plants will be installed.

Rafael Zepeda of Guanacevi, State of Durango, Mexico, and other mine owners of that district will install a reduction mill for the treatment of their ores at a cost of about $300,000, Mexican money.

J. P. Warr, Hedley Ludlow and G. Gonzalez, all of Pachuca, Mexico, have formed a company for the purpose of installing an ore reduction mill of 100 tons daily capacity at Atotonilco, State of Hidalgo. The company has a capital stock of $400,000, Mexican money.

C. A. Bentley of Zacatecas, Mexico, and associates will install an ore concentrating plant in that district.

The Cajones Mining Company will soon have plans drawn for a stamp mill of 200 tons daily capacity, which it will install at Villa Alta, State of Oaxaca, Mexico. The company will also install a 300-hp. hydro-electric plant.

The Bryan Cotton Oil & Fertilizer Company, Bryan, Texas, has let the contract for the erection of a large seed house, which will be supplied with cleaning machinery.

## The South

CHATTANOOGA, TENN., December 5, 1910.

F. M. Welch, Chas. Maurin and others of Donaldsonville, La., have organized the Lafourche Valley & Gulf Railway Company, to build an electric traction line between that city and Lockport. None of the equipment details will be taken up before spring.

The electric power and pumping plant operated by the city of Cairo, Ga., the equipment of which includes a Crocker-Wheeler generator driven from a Harrisburg engine, will probably be enlarged in capacity. The boilers at present installed were furnished by the J. S. Schofield's Sons Company, Macon, Ga., and will need to be added to.

A new engine and other machinery will be provided for the plant of the McInnis Lumber Company, Hattiesburg, Miss., which recently sustained considerable damage from the bursting of a flywheel.

A bond issue of $25,000 for the construction of water works and a sewage plant is to be voted at Sarasota, Fla.

The Greenville Chair Company is planning the erection of a factory building at Greenville, Tenn.

An appropriation of $50,000 for water works construction has been decided upon at Russell, Ky.

The Marion Electric Company has been organized to take over and improve the plant and system of the Marion Light & Power Company, Marion, Ala., which has a present capacity of 125 kw.

One of the most complete crushing plants in the South is being erected by the North Carolina Granite Corporation at Mt. Airy, N. C., for handling granite. Power will be supplied from a steam plant equipped with two boilers of 300 hp. capacity, and a Hamilton Corliss engine unit.

T. W. Jay, Leesburg, Fla., will establish a wagon factory and repair plant, 30 x 100 ft.

The Richmond Iron Works Corporation, Richmond, Va., is erecting a new building to accommodate the manufacture of a line of automobiles to be known as the Virginian. Details as to the equipment are not available.

## Government Purchases

WASHINGTON, D. C., December 5, 1910.

The Bureau of Supplies and Accounts, Navy Department, Washington, will open bids December 27, under schedule 3099, for one motor driven power pump to be delivered at Navy Yard, Mare Island, Cal.

The Paymaster-General, Navy Department, Washington, will open bids December 13, under schedule 3052, class 1, for one double service planing machine, and on December 20, under schedule 3092, class 1, for one steam drop hammer.

The office of the Constructing Quartermaster, Fort Bayard, N. M., will open bids December 24 for furnishing and installing complete two compound duplex steam pumps.

The Isthmian Canal Commission, purchasing department, Washington, will open bids under canal circular Z 4879A for one power hack saw, 24-in. blade.

The Isthmian Canal Commission, Washington, opened bids November 18, for furnishing one wood boring machine, as follows: Chicago Pneumatic Tool Company, New York, $70; Independent Pneumatic Tool Company, Chicago, Ill., $70; Ingersoll-Rand Company, New York, $64.80.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids November 22, as follows:

Schedule 3013, class 1, for two electric driven compound geared deck winches and controllers—Bidder 70, Hyde Windlass Company, Bath, Maine, $2450; 173, Williamson Brothers Company, Philadelphia, Pa., $2600.

The Secretary of the Department of the Interior, Washington, opened bids November 17 for furnishing engine, generators and switchboard for the central power plant at the Freeman's Hospital and Howard University, Washington. The bids for the completed work are as follows: Blackall & Baldwin Company, New York, $15,808; Allis-Chalmers Company, Milwaukee, Wis., $14,450; Lord Electric Company, New York, $14,982; General Electric Company, Schenectady, N. Y., $16,090; National Electrical Supply Company, Washington, D. C., $13,455; Harrisburg Foundry & Machine Works, Harrisburg, Pa., $13,850; Westinghouse Electric & Mfg. Company, Baltimore, Md., $14,447; McCay Engineering Company, Baltimore, Md., $14,295; A. D. Granger Company, New York, $17,443.

**Returning Goods to Manufacturers.**—The Walworth Mfg. Company, 128 to 136 Federal street, Boston, Mass., has issued a circular from which the following extracts are taken: "The practice of returning goods without notification, where no fault exists on our part, has become a very serious evil, and we have decided in future not to accept material of any kind or description unless we have been notified of the return and our permission for such return given. Where the fault does not lie with us, we shall make a charge for clerical labor and incidental expenses of 10 per cent., and such other expenses which we may have been put to in the way of freight or expressage. If, however, the fault is with us, we expect to stand the cost. We think the trade will agree with us that the charge as proposed is not a heavy one, in view of the expense to which we are put in examining the goods and passing the credit through our books."

**To Push Pittsburgh's Industrial Growth.**—The Trade and Commerce Committee of the Chamber of Commerce, Pittsburgh, has sent requests to every member for suggestions on the subject of diversified industries for the Pittsburgh district. Inquiry blanks giving space for various forms of suggestions relating to transportation, taxation, fuel, advertising and the like accompanied the requests. The letter says in part: "You are invited to submit to the committee any ideas or suggestions which you may have regarding the methods which have been pursued in other localities, or which your experience leads you to believe would be most useful in Pittsburgh; also at any and all times to lay before the committee any information which you may have regarding new industrial establishments which might be induced to locate here, and, in general, any data or information which would aid in prosecuting this important work."

**Eclipse Concrete Mixers at New York Cement Show.**—The Standard Scale & Supply Company, Pittsburgh, will have on exhibition at the New York Cement Show a display of Eclipse concrete mixers, including one of the new special rear discharge machines, which has an engine set at the side of the drum, and has been built especially for street paving and other work, where it is desirable to move the mixer forward as the work progresses. The company will also have in operation a motor driven mixer mounted on skids, showing the advantages of low charging and open drum; when this machine is seen in operation, it demonstrates fully that the concrete obtained from it is thoroughly mixed.

The Pennsylvania Railroad Company is erecting at Altoona, Pa., an addition to its steel car shops. It is a steel building, 90 x 450 ft., and will be equipped with machinery for the manufacture of steel cars.

## Obituary

GEORGE H. ROGERS, Hartford, Conn., of the Simeon L. & George H. Rogers Mfg. Company of that city, died November 29, aged 62 years. He was born in Hartford. For some years he was engaged in farming near Meriden, but returned to Hartford to take an active part in the management of the business, serving part of the time as the secretary of the company. He leaves a widow and two sons.

CHARLES JOSEPH DE BERARD, secretary and treasurer of the Felt & Tarrant Mfg. Company, Chicago, died November 28. He was born at Racine, Wis., August 7, 1849, removing to Chicago in 1866. For 25 years he was associated with Robert Tarrant in the machine shop business, and continued until his death as a stockholder and director in the Tarrant Foundry Company. In recent years, however, he was actively identified with the Felt & Tarrant Mfg. Company. He leaves a widow, three daughters and two sons.

HENRY FAIRCHILD DE BARDELEBEN died at Birmingham, Ala., December 6, aged 71 years. He was a pioneer in the development of the iron industry in the Birmingham district, in which he began operations in 1872. At the time of his death he was actively engaged in opening up a coal property.

JOHN H. BARKER, president of the Haskell & Barker Car Company, Michigan City, Ind., died December 3, of pneumonia, aged 66 years. He was born in Michigan City, his father being one of the founders of the company. He was a shipping clerk in a Chicago wholesale sugar house and later a grocer at Springfield, Ill., before taking a minor place at the car works, at the age of 25. He became general manager two years later and continued in that position until 1883, when he was elected president. He contributed much to the progress and prosperity of the city in which he lived, leaving as monuments to his liberality the Y. M. C. A. building, public library, a hospital, park buildings, &c. He served one term as mayor. He leaves a daughter.

WILLIAM P. LETCHWORTH died at Buffalo, December 1, aged 87 years. He was one of the founders of the Pratt & Letchworth Company, being associated in its beginnings in 1848 with P. P. and S. F. Pratt. He retired from active participation in the business more than 30 years ago.

JULIUS E. FRENCH, chairman of the Board of Directors of the Railway Steel Spring Company, and prominently identified with a number of other large corporations, died at the home of his daughter, Mrs. Harry K. Devereux, Cleveland, Ohio, December 2, aged 73 years. A month ago he underwent an operation for an affliction of the stomach. He was born in Perry, Ohio. About 1875 he purchased the Winslow Car Roofing Company in Cleveland, and up to a year ago he was president of its successor, the Chicago-Cleveland Car Roofing Company. He was president of the Page Car Wheel Company, and became president of the Steel Tire Wheel Company when the former was consolidated with the latter in 1898. As the general offices were located in New York, he moved to that city from Cleveland in that year. Later the Railway Steel Spring Company was formed by the consolidation of the Steel Tire Wheel Company and other companies and Mr. French was elected president of the enlarged corporation, which office he held until two years ago. At the time of his death he was a director of the American Locomotive Company, the Standard Sewing Machine Company and several other companies.

WILLIS H. ESTERLY, secretary and treasurer of the Mannen & Esterly Company, Cleveland, Ohio, maker of sheet metal goods, died December 2 of pneumonia, aged 43 years.

## Personal

William L. Neilson, assistant sales manager of the Norton Company, Worcester, Mass., has sailed for Germany, to take charge of the company's works at Wesseling.

George C. Gordon of Worcester, Mass., for four years superintendent of the Wyman & Gordon Company, manufacturer of automobile crank shafts and high grade drop forgings, has joined the forces of the Park Drop Forge Company, Cleveland, Ohio, as works manager. He is a graduate of the Worcester Polytechnic Institute, and has been master mechanic of both the Carpenter Steel Company and the American Steel & Wire Company. The addition of Mr. Gordon anticipated an increase in the forging equipment of the Park Drop Forge Company to enable it to care for the heavier class of forgings that the development of the commercial automobile has made necessary. Heavier hammers and a hydraulic outfit are being considered.

A dinner was given by Waddill Catchings, receiver of the Central Foundry Company, to the New York office force, at Reisenweber's, New York, on the evening of November 26. In addition to the executive and official staff of the New York office, there were present C. C. Todd, the Western representative; A. T. Drysdale and F. T. Suehle, of the Baltimore plant; J. Miller and H. Johnson, of the Newark plant, and C. J. Conley, of the Medina plant. The participants numbered about 60.

Wm. Van C. Brandt, who had been connected with the testing department of the Pennsylvania Steel Company, Steelton, Pa., recently accepted a position as salesman with the Colonial Steel Company, Pittsburgh, with headquarters at Springfield, Mass. Previous to entering the steel business he was a midshipman in the United States Navy.

The ninth annual dinner of the Carnegie Veterans' Association was given at the residence of Andrew Carnegie, at Fifth Avenue and Ninety-first street, New York, Friday evening, December 2, and was attended by 36 of Mr. Carnegie's partners and other associates in the Carnegie Steel Company. Mr. Carnegie was re-elected president, Charles M. Schwab vice-president and Charles L. Taylor secretary. Remarks were made by Mr. Carnegie, W. E. Corey, W. B. Dickson, H. P. Bope, John C. Fleming, W. P. Palmer, L. C. Phipps, C. M. Schwab, R. A. Franks and Ambassador J. G. A. Leishman.

E. C. Felton, president of the Pennsylvania Steel Company; C. F. Rand, president of the Spanish American Iron Company, and Quincy Bent, assistant to the president of the Maryland Steel Company, are in Cuba visiting the iron ore properties of Pennsylvania Steel Company interests.

A. A. Fowler, of Rogers, Brown & Co., who is recovering from a severe illness, has gone South for a short stay.

Abbott A. Thayer, of the Cincinnati Milling Machine Company, Cincinnati, Ohio, sailed for Europe last week, where he will establish several branch offices for his company.

Richard Tuffli, vice president of the Tuffli Bros. Pig Iron & Coke Company, St. Louis, sailed November 29 on the steamship Siberia for Honolulu and will spend the winter there.

Frank Salomon, formerly chief engineer for Alfred H. Schutte, the German machinery exporter, has resigned to take charge of the Otto Gas Engine Works, Philadelphia, Pa.

Under date of Thursday, December 1, Wallace H. Rowe, president of the Pittsburgh Steel Company, Frick Building, Pittsburgh, Pa., issued the following announcement: "Effective January 1, 1911, Samuel A. Benner, formerly general manager of sales of the Carnegie Steel Company, will assume the position of

assistant to the president of this company, with headquarters in Pittsburgh, performing such duties as may be assigned to him by the president. F. H. Forman, general manager of sales of this company since its incorporation, will continue in that capacity as heretofore."

# Exports Under the Drawback Law

## Decrease in Such Exports in the Fiscal Year 1910

WASHINGTON, D. C., December 6, 1910.—The export movement of manufactures with benefit of drawback of the duty paid on imported materials used in their production suffered a decline during the fiscal year ending June 30, 1910, of more than 6 per cent. This was notwithstanding the fact of a gain of more than 14 per cent. in the exports of manufactured products of all kinds, according to advance figures furnished the correspondent of THE IRON AGE by the Bureau of Statistics of the Department of Commerce and Labor. The decline is rendered additionally significant because of the fact that during 11 months of the fiscal year 1910 the new tariff law was in force with its slightly enlarged provision covering dutiable materials imported for use in the construction of vessels for foreign account.

In view of the wide discussion of the drawback question, while the Payne-Aldrich bill was pending in Congress, the strenuous efforts made by manufacturers and exporters to secure amendments liberalizing section 30 of the Dingley act and the refusal of the Conference Committee to materially enlarge the scope of the law, the statistics for 1910 are highly suggestive and indicate that until important amendments are made in the present law no great increase in exports with the benefit of drawback may be expected.

### Drawbacks Compared with Exports

The following table, showing the drawbacks paid and the exports of manufactures of all classes during the past six years, is of interest:

| Fiscal year. | Drawbacks paid. | Exports of manufactures. |
|---|---|---|
| 1905 | $5,806,475 | $611,425,574 |
| 1906 | 5,831,124 | 686,023,169 |
| 1907 | 5,445,150 | 740,314,557 |
| 1908 | 6,637,602 | 742,575,841 |
| 1909 | 6,604,432 | 671,416,014 |
| 1910 | 6,182,375 | 768,309,063 |

The shipments of goods made in part with foreign materials eligible to drawback duties reached high-water mark in 1908, when the increase over the preceding year was proportionately large when compared with the slight gain in the exports of manufactures. The increased utilization of the drawback law in 1908 was very largely due to the movement to secure a more liberal statute, which brought to many manufacturers their first knowledge of existing opportunities to extend their foreign trade. The Treasury Department during 1908 promulgated an unusually large number of drawback regulations, under which many manufacturers operated for a year or more, only to abandon them after the cost of complying with the stringent requirements of the Department became clearly apparent. The year 1909 witnessed a material decline in the number of regulations in force, but certain large producers increased their output of export goods, which enabled the year to show a record almost equal to 1908.

### Drawbacks on Metal Products

The statistics covering the exports of manufactures of iron and steel and other metals with benefits of drawback during 1910 show a decline corresponding closely to the decrease in the total shipments of all classes of drawback goods. But for the substantial increase made in the exports of tin cans, chiefly employed as containers for petroleum, the metal schedule would have reflected a much heavier loss. The following table shows the refund on each class of metal products in the fiscal year 1910 as compared with 1909:

| Articles exported. | Drawbacks paid. 1909. | Drawbacks paid. 1910. |
|---|---|---|
| Agricultural implements and parts | $80,184 | $15,948 |
| Aluminum and manufactures | 52,675 | 189,633 |
| Automobiles | 6,182 | 4,905 |
| Cars, railroad | 1,287 | 43 |
| Cars, railroad, parts of | 280 | .... |
| Cars, all others | 266 | 6 |
| Cable, electric | 29,721 | 47,693 |
| All other electrical appliances | 5,669 | 3,410 |
| Bar iron | 5,507 | 9,468 |
| Billets, ingots and blooms | 12,937 | .... |
| Sheets and plates, steel | 5,003 | 25,981 |
| Structural iron and steel | 59,873 | 1,455 |
| Wire and manufactures of | 21,708 | 38,867 |
| Castings | 4,422 | 6,133 |
| Hardware | 132 | 115 |
| Saws | 4,577 | 6,834 |
| Tools, all other | 420 | 230 |
| Pumps and pumping machinery | 3,508 | 112 |
| Steam and other engines and parts | 90,659 | 7,785 |
| Boilers | 5,247 | |
| All other machinery | 2,363 | 2,417 |
| Nails and spikes | 2,669 | 2,299 |
| Pipes and fittings | 2,638 | 1,148 |
| Pulley blocks and chains | 935 | 690 |
| Railroad fish plates and splice bars | 11,560 | 7,522 |
| Steel rails | 25,033 | 22,424 |
| Shade rollers | 4,299 | 2,380 |
| Spoons, tinned | 1,245 | 411 |
| All other manufactures of iron and steel | 2,918 | 4,146 |
| Babbitt and magnolia metal | 13,856 | 6,725 |
| Pig and bar lead | 24,414 | 88,883 |
| Lead pipe and fittings | 3,578 | 2,140 |
| Sheet lead and shot | 11,872 | 5,143 |
| Lead seals | 5,333 | 3,510 |
| Type metal | 8,118 | 1,029 |
| Other lead manufactures | 640 | 1,080 |
| Tin cans | 1,754,176 | 1,916,977 |
| Tin, crystallized and embossed | 3,994 | 4,262 |
| Tin plates, lithographed | 3,048 | 4,461 |
| Tin foil | 24,184 | 18,951 |
| All other tin manufactures | 660 | 676 |
| Metals not elsewhere specified | 368 | .... |
| Totals | $2,307,170 | $2,185,891 |

### A Precarious Business

The above table reflects clearly the precarious character of the export trade with the benefit of drawback as it is able to exist under the present law. Except in the items of tin cans and steel rails, heavy fluctuations are noted in all important classes of goods, showing clearly that refunds are obtainable only on occasional orders and that it is difficult, if not impossible, to build up a steady trade under the regulations which the Treasury Department now feels justified in promulgating.

In considering the overshadowing importance of the item of tin cans in the above table, the fact should be borne in mind that it represents only the Welsh plate brought to this country for the manufacture of containers for oil, &c., and is in addition to the domestic plate exported with benefit of the unofficial drawback, although, as pointed out in *The Iron Age* last week, there has been less of this domestic drawback business during the past three years than during the five years following the arrangement effected in 1902 between the manufacturers and their workmen to accept wage reductions on export orders.

### Movement to Liberalize the Law

One of the most energetic campaigns conducted in the interest of exporting manufacturers while the Payne-Aldrich bill was under consideration was directed to securing the liberalization of the drawback law. The House passed a comprehensive provision for the allowance of drawback claims in cases where the technical requirements of the term "manufacture," as construed by the United States Supreme Court, could not fully be met, allowing claims on the substitution principle, where the foreign material in the finished product is not capable of identification, but where evidence is adduced that at least an equal quantity has

actually been imported and traced to the manufacturer's plant; permitting goods to be consumed on shipboard with benefit of drawback; allowing rebate of internal revenue tax on goods withdrawn from bonded warehouses and used on shipboard, and permitting drawbacks to be paid on imported coverings used on exported American goods.

This provision was stricken out by the Finance Committee when the bill was reported to the Senate, but the statement was made that a new section would be adopted in conference that would prove satisfactory to those who were interested in enlarging the scope of the drawback statute. When the bill reached conference, however, the House conferees appeared to have lost interest in the provision framed by the Ways and Means Committee, and the result was the adoption and final re-enactment of the drawback section of the Dingley law with the addition of a provision allowing rebates of internal revenue tax on domestic alcohol used in the production of articles for export and the following amendment covering materials imported for use in the construction of vessels for foreign account:

That the provisions of this section shall apply to materials used in the construction and equipment of vessels built for foreign account and ownership, and for the government of any foreign country, notwithstanding that said vessels may not within the strict meaning of the term be articles exported.

It will be seen, therefore, that in spite of the long continued efforts to enlarge the drawback law the statute to-day is substantially what it has been for a century, except that specific provision is made for materials used in the construction and equipment of vessels built for foreign account. It is unquestioned that such materials were intended by the framers of the earlier drawback laws to be eligible to refund of duties paid thereon, but the United States Supreme Court defeated this purpose by holding that a vessel built in an American shipyard for foreign account could not be said to be "exported" within the technical meaning of the term when she raised a flag and sailed for a foreign port.

The movement to further amend the drawback law with a view to reducing the cost to the manufacturers of the country of operating thereunder has not been abandoned, and it is the hope of those who have conducted the campaign in the past that an independent statute will be passed by Congress in the not far distant future covering the entire subject in a comprehensive, nonpartisan and thoroughly practical manner. At present the cost of operating under the existing law and regulations is prohibitive in many trades, and the only manufacturers who have met with much success in building up a foreign market for their products, exported with the benefit of drawback, have been those who have been able to set aside plants devoted exclusively to the filling of export orders. W. L. C.

**A New Metal Tempering Process.**—P. J. A. Douglass, Dartmouth, Nova Scotia, has discovered a process for tempering nonferrous metals. Among the special advantages claimed for metals treated in this way are noncorrosiveness, flexibility and a uniform temper. Metals treated by this process are capable of taking a keen edge, which renders them available for cutlery and all kinds of tools. It is possible to use castings of these metals which are cheaper than forged steel. E. E. Cleaveland, Chester, Nova Scotia, was associated with Mr. Douglass in the development of the process.

The Pressed Steel Car Company, Pittsburgh, has received an order for 1200 steel underframes for 600 box and 600 steel gondola cars to be built by the Louisville & Nashville Railroad at its shops at Louisville, Ky.; also an order for 30 steel tank cars for the Spokane, Portland & Seattle Railroad.

## Customs Decisions

### Corrugated Galvanized Sheets

The United States Court of Customs Appeals has handed down an important decision in the case of J. J. Moore & Co. *vs.* United States with regard to the dutiable classification of corrugated iron sheets, under paragraph 193 of the tariff act of 1897. The special significance of the decision is due to the fact that large importations of such sheets were made at various ports prior to the passage of the new tariff act and the liquidation of the entries thereof has since been suspended.

Duty was assessed upon the sheets at 45 per cent. ad valorem, with two-tenths of 1 cent per pound additional under paragraph 132, because they were galvanized. The importers contended that if the sheets were dutiable under paragraph 193, which is the basket clause of the metal schedule, paragraph 132 could not properly be applied thereto, for the reason that it relates to articles described in paragraph 131. The Board of General Appraisers overruled the importers' protest, whereupon an appeal was taken to the United States Circuit Court and the case subsequently transferred to the Court of Customs Appeals. After an exhaustive review of the law and facts, the court sustains the contention of the importers, including the additional duty, thereby reversing the board and the collector, in a decision in part as follows:

The further contention is made that, if paragraph 193 applies, then by its very terms paragraph 132 cannot. There is much force in this contention. Paragraph 132 follows paragraph 131, in which a specific, definite finding as to the rate of duty which iron or steel sheets would bear is ascertainable, and the purpose of paragraph 132 was to add two-tenths of one cent per pound when galvanized, and this two-tenths of one cent per pound was said to be more duty than if the same was not galvanized or coated. This would be easy of ascertainment in a case coming within the provisions directly imposing a duty upon the sheets of iron or steel specifically. But it will be noted that the catch-all clause, paragraph 193, relates to all classes of importations not specifically provided for, including articles composed wholly or in part of iron, steel, lead, or other metal, which would include of necessity the metal employed in galvanizing, and upon articles of this class a duty of 45 percentum ad valorem is fixed. We think this contention should be allowed, and that the provisions of paragraph 132 can only be applied in cases where specific duty is in terms imposed upon the sheet of steel or iron, &c.

We do not overlook the cases, T. D. 26,152, G. A. 5967 and T. D. 26,866. It is true that in these cases the board took a different view of these paragraphs. What considerations were brought to the attention of the board does not appear. The language of the board was, "Being, however, galvanized, they are covered by the express terms of paragraph 132, and are subject to the additional duty of two-tenths of one cent per pound therein provided for galvanized iron sheets." We do not agree with this interpretation of the statute. Under paragraph 193 there is no means of ascertaining authoritatively what the duty on this importation would have been had it not been galvanized. The appraisal is of the goods as imported, and necessarily so, and we cannot accept the view that in addition to the full duty of 45 percentum ad valorem upon the article, which perhaps for the very reason that it is galvanized is brought within the provisions of section 193, and is placed there for the purpose of fixing the appraisal, that the additional duty should be imposed of two-tenths of one cent per pound because of a condition which resulted in bringing it within that paragraph. It does not and cannot be made to appear that this importation would be dutiable at all under paragraph 193 had it not been galvanized. It is a fair inference in the present case that it would not have been, as the value of the goods as found by the collector was only 3.68 cents per pound, and it may well be inferred that the 0.68 cent would no more than cover the cost of galvanizing. But be that as it may, there is certainly no provision for any authoritative ascertainment of what would have been the dutiable value or the duty upon this importation had it not been galvanized.

The decision of the Board of General Appraisers is modified to the extent of directing a reliquidation, excluding the two-tenths of one cent per pound additional duty.

Princess Furnace of the Princess Iron Company, Glen Wilton, Va., was blown out November 29, and will remain out indefinitely.

# Trade Publications

**Castings.**—Light Mfg. & Foundry Company, Huntstown, Pa. Four pamphlets. The first is a general one dealing with the various kinds of aluminum and bronze castings made by this company, while the other three are concerned with white brass and babbitt, plastic bronze and manganese bronze castings, respectively.

**Power Transmission Machinery.**—The Hill Clutch Company, Cleveland, Ohio. Catalogue No. 9. Size 6 x 9 in.; pages 194. Describes and illustrates with numerous half-tones and sectional views the complete line of the company's products, which includes the Smith type of Hill friction clutch, mentioned under New Tools and Appliances in *The Iron Age* September 8, 1910; the Hill collar oiling and other bearings, gears, pulleys, hangers, &c. The catalogue is intended for the engineering and construction departments of companies interested in transmission machinery as well as for the purchasing department, and in addition to the prices it contains much information valuable to the former departments. This includes a table of the horsepower transmitted by double leather belting on plain or friction clutch pulleys, a table for laying out shafting, standard sizes of keyseats for friction clutches, horsepower and speed of gears and rules for calculating the speed of gears and pulleys. The American and English rope transmission systems are described at length with capacity tables and formulæ, and illustrated instructions regarding rope splicing are also given.

**Water Tube Boilers.**—The Milne Water Tube Boiler Company, 30 Church street, New York City. Pamphlet. Points out the advantages of the Milne water tube boiler, some of which are uniform strength, reduced cost of maintenance, accessibility, dry steam, steady water level and durability. These boilers are constructed of wrought steel throughout and each is a complete unit composed of three members only, the drums, the tubes and the economizers. The construction of these parts is illustrated and described and there are a number of views showing the installation of the boiler.

**Marine Gasoline Engines.**—The Mianus Motor Works, Mianus, Conn. Catalogue. Size 6 x 9 in.; pages 32. Refers to a line of marine gasoline engines which are claimed to be easy to start, readily reversible, simple to operate and capable of having the speed varied at will. Six sizes of engine in all are built, ranging from a 3-hp. single cylinder motor to a double cylinder type capable of developing 15 hp. The special features of these engines are illustrated and described and space is given to accessories, such as propeller wheels, stuffing boxes, ignition supplies, gasoline tanks and piping, &c.

**Water-Jet Eductors.**—Schutte & Koerting Company, Twelfth and Thompson streets, Philadelphia, Pa. Catalogue 2, Section M. Contains a number of illustrations of the Koerting water-jet eductors, which are extensively used for draining cellars and pits, washing filter sand, discharging ashes from a boiler room and sinking mine shafts, the actuating fluid being taken either from a local source or supplied by pressure pumps. These eductors are made with screwed or flanged ends and the water supply and discharge pipes can be connected either to the ends or to the top.

**Automatic Screw Machinery.**—The National-Acme Mfg. Company, Cleveland, Ohio. Folder. Calls attention to the special features of the Acme automatic multiple spindle screw machine for the manufacture of bolts, nuts, screws and all duplicate parts from metal bars, which are power, speed, control, convenience, economy and safety. An illustrated description of this machine was printed in *The Iron Age*, June 4, 1908. Of special interest in the folder is a list of records established in various railroad repair shops throughout the country for manufacturing various parts with the machine.

**Bolt Pointing, Threading and Special Tapping Machines.**—The Webster & Perks Tool Company, Springfield, Ohio. Brochure. Refers to the improvements made in the company's horizontal threading and special tapping machines. The different machines which include single spindle bolt pointing machines, one and two spindle automatic threading machines and several special types of threading and tapping machines are illustrated and brief specifications are given on the facing pages.

**Turbine Water Wheels.**—Norrish Burnham & Co., Glen Rock, Pa. Catalogue. Shows an improved type of turbine water wheel. Space is given to a historical account of turbine water wheel manufacture. Illustrations show the different types of wheels, both vertical and horizontal, and a number of suggested installation schemes are given.

**Pumping Machinery.**—The Weinman Pump Mfg. Company, Columbus, Ohio. Catalogue No. 11. Covers a line of steam and belt and electric driven pumps for all purposes. The general construction of the company's horizontal and vertical pumps is explained, followed by illustrations and brief specifications of the different types going to make up the complete line, with lists of repair parts, tables of dimensions, &c.

**Presses.**—Albright Company, Goshen, Ind. Catalogue. Size 6 x 9 in.; pages 73. Concerned with presses for a number of different purposes, such as pressing scrap of all kinds, baling waste, making leather belting, crimping and embossing all kinds of leather or sheet metal goods, &c. The different types are illustrated and brief specifications are given on the facing pages.

**Valves.**—Glenn Valve Mfg. Company, 1906 North Halsted street, Chicago, Ill. Catalogue. Describes and illustrates the Glenn patent balanced valves, which are especially adapted to working under high pressures of steam, water or other media and are made in both the three and the four way styles. A special extra heavy globe valve is built in sizes ranging from ½ to 4 in., inclusive.

**Portable Crane and Hoist.**—Franklin Portable Crane & Hoist Company, Franklin, Pa. Brochure. Describes and illustrates a portable crane and hoist, built in 12 sizes, and designed for use in shops, factories and wherever it is necessary to lift heavy bodies or transfer them from place to place with safety and the minimum of time and labor.

**Pumps.**—The Humphryes Mfg. Company, Mansfield, Ohio. Vol. 1, No. 2, of the *Water Lifter*. Refers to the Blazer patent spiral pump, rotary pumps, hydraulic rams, a vertical centrifugal pump and a rotary pump especially designed for use in garages. An illustrated description of the Blazer pump appeared in *The Iron Age* March 31, 1910.

**Pneumatic Riveters.**—Hanna Engineering Works, 2050 Elston avenue, Chicago, Ill. Card. Gives instructions to operators of the Hanna type pneumatic riveters for adjusting the dies so as to secure the maximum output of the machine with the minimum consumption of air.

**Quick Threading Attachment.**—The Hendey Machine Company, Torrington, Conn. Pamphlet. Points out the advantages of the attachment recently brought out by the company for returning the carriage at high speed to the start of the cut. Only seven parts are employed, and when the attachment is not in use it can be easily disconnected and moved down to the foot of the lathe bed, where it is out of the way. The engravings show the attachment in its several parts and also when applied to the lathe, both in and out of use, and complete instructions for applying and using the device are included. *The Iron Age*, November 10, 1910, contained an illustrated description of this attachment.

**Vacuum Cleaner.**—Keller Mfg. Company, Twenty-first street and Allegheny avenue, Philadelphia, Pa. Pamphlet. Contains instructions for unpacking and installing the Keller duplex vacuum cleaner, which was illustrated in *The Iron Age* November 10, 1910.

**Underground Conduits.**—W. N. Matthews & Brother, 210 North Second street, St. Louis, Mo. Pamphlet. Size 4 x 6 in.; pages 92. Contains specifications on underground conduit construction for all forms of work, which are supplemented by illustrations of manhole and conduit systems and figures showing the cost of constructing conduit systems in various kinds of streets. Space is also given to guy anchors and a number of accessories for both overhead and underground construction work.

**Electric Steel Sheets.**—Follansbee Brothers Company, Pittsburgh, Pa. Blue print. Gives information on the results obtained from tests of steel sheets for armatures. The special advantages claimed for these sheets are a very low core loss and an exceedingly high permeability.

**Stencil Machine.**—The Bradley Stencil Machine Company, St. Louis, Mo. Circular. Devoted to a circular stencil machine in which the dial is mounted on a wheel which revolves the disk, thus eliminating the danger to the operator's hands said to be present in all other machines, due to having to take hold of the disk to revolve it.

**Switchboards.**—Walker Electric Company, Philadelphia, Pa. Cloth bound book. Size 5¼ x 7¼ in.; pages 212. A treatise, illustrated, on the past, present and future of switchboards, showing the difference between the early types of boards built of wood covered with asbestos and the present marble ones. There are chapters on measuring instruments, circuit breakers and Walker switchboards, and some 50 pages are devoted to wiring diagrams, tables of knife switches and other data.

**Pumps.**—Dean Brothers Steam Pump Works, Indianapolis, Ind. Pony catalogue No. 82. Describes briefly pumps for mining, boiler feed and condensing purposes. A patent twin cylinder air pump, designed for surface and jet condensers, is shown which is claimed to be the only twin cylinder air pump that can be converted into separate pumps. In the large sizes of combined air pumps and jet condensers, the tail rod projects from the air piston and is carried on a bronze adjustable bearing. This relieves the bore of the air cylinder from the weight of the piston, while an extension casting, bolted to the cylinder head, covers the tail rod, so there can be no air leakage.

**Pumps.**—The Hazen Mfg. Company, Hudson, Mich. Catalogue No. 2. Gives general description and specifications for a number of double acting force and lift pumps which can be used on wells ranging from 25 to 200 ft. in depth. Instructions are given for the setting and the operation of these pumps, and a number of supplies and accessories such as well valves, well cylinders and points, check valves, packing box heads, pump rods, fittings and tanks are covered.

## Scandinavian Progress in Electrometallurgy

Dr. Joseph W. Richards, Professor of Metallurgy at Lehigh University, Bethlehem, Pa., delivered an interesting lecture at a section meeting of the Franklin Institute, Philadelphia, on the evening of December 1, on "A Vacation Trip in Scandinavia, with some Observations on the Electrometallurgy of Iron and Steel." Dr. Richards took his hearers on a most instructive tour through Denmark, Sweden and Norway, illustrating his travels by blackboard sketches and lantern slides. Particular attention was called to the rapid advance of electrochemical and electrometallurgical development in Sweden and Norway. The progress of electric power plants, using the numerous natural water falls was especially dwelt upon.

The use of electric furnaces for the manufacture of pig iron is claiming, he stated, much attention on the part of the Swedish ironmasters, and experimental shaft furnaces have been erected and operated for development work along that line. The high cost of charcoal and coke, the latter imported from England, necessitates the development of the electric shaft furnace for pig iron making and it has already shown its economy, when used in connection with power cheaply supplied from the use of natural water falls, which are most abundant and can be depended upon for steady supplies. In 10 years, he believes, the manufacture of pig iron in those countries will be almost exclusively by electrical methods. The manufacture of chemicals by the application of electrochemical methods is already large in Norway and was being steadily expanded. The manufacture of steel by the use of the electric induction furnace has been successful in a moderate way, and is now about to be largely increased. Dr. Richards stated that he believed that Sweden and Norway would shortly become important factors in the manufacture of steel by electrical methods, and that the cost would be low, as power, and transportation are cheap, the plants being located on deep water, close to the natural sources of power.

**The Williamson Free School of Mechanical Trades.**—Bulletin No. 6, recently issued by the Williamson Free School of Mechanical Trades, Williamson School Post Office, Pa., answers the question, "Can Trades be Taught in a School?" in the affirmative and presents statistics of the class which was graduated March 26, 1910, to support its contention. At the present time 50 of the 51 members of the class are working at the trade which they learned at school and all but one of them say that they are well suited. The various trades represented include 12 bricklayers, 13 carpenters, 4 operating engineers, 11 machinists and 10 pattern makers. The average number of hours employed per week varies with each trade from 51 for the bricklayers to 61.7 for the operating engineers, the general average of all being 53.79 hours. The average rate of wages received per hour was a maximum for the bricklayers and a minimum for the engineers, the general average being 30.8 cents per hour.

**A New Crucible Steel Casting Plant.**—The Seitz Automobile & Transmission Company, Detroit, Mich., has purchased and is equipping a large plant at Monroe, Mich., for making crucible steel castings. This plant will be known as the Seitz Crucible Steel Foundry. There are two main buildings, each 50 x 140 ft. having steel frame, brick walls and slate roof. On each side is a wing 26 x 140 ft.; an office in the front portion is 61 x 126 ft. The foundry will make both crucible and converter steel, and its capacity will be sufficient to allow it to handle considerable outside business, in addition to making all of the castings required by the Seitz Automobile & Transmission Company. The complete equipment for making crucible steel is now installed, but converter equipment and a cupola will be added as soon as possible. None of this latter equipment has been purchased as yet. The foundry will be under the management of Malcolm MacLeod, who has been identified with the production of crucible steel in Western plants since 1873.

**The Royersford Foundry & Machine Company's European Branch.**—John D. Sells, general manager of the Royersford Foundry & Machine Company, Royersford, Pa., has just returned from a three months' business trip to Europe, where he went to extend the company's connections for the sale of its Sells roller bearing and its general line of power transmission machinery. A branch has been opened at 149 Queen Victoria street, London, E. C., in charge of Theodore Butler, where will be carried the largest stock of power transmission machinery to be found in Great Britain or on the Continent. Mr. Sells reports business at home and abroad as exceptionally good. Although the company has erected an additional building, 50 x 150 ft., it is compelled to run the plant 20 hours a day in order to meet the demand for its products.

**The Chemists' Club Building.**—The Chemists' Building Company, organized by members of the Chemists' Club, New York, is stated by the *Electrical World* to have erected a ten-story fire-proof building on a lot 56 x 100 ft. at 50-54 East Forty-first street, New York City. The lower half of the building is leased to the club and contains all the conveniences for a social club, together with a large auditorium for scientific meetings and ample space for a complete chemical library and museum. The five upper stories have been specially constructed for laboratory purposes and will be rented either as entire floors or in suitable subdivisions to analytical, commercial or research chemists, physicists, electrochemists, bacteriologists, etc., but not as manufacturing laboratories.

The Buhl Malleable Company, Detroit, Mich., has awarded a contract for the construction of an open hearth steel foundry, 65 x 300 ft., to be of steel construction with cement foundation. The company expects to have the foundry ready for occupancy by March 1. The arrangement of the buildings enables the company to handle its different lines under one management and control. The new plant will be equipped with two ten ton cranes and all modern machinery for the production of steel castings, ranging in weight from 300 pounds down.

The Drake-Williams-Mount Company, Omaha, Neb., has just completed at the plant of the American Smelting & Refining Company in that city a smokestack which is claimed to be the largest and highest self-supported steel smokestack on earth. It is 28 ft. in diameter at the base, narrowing to a point 50 ft. from the ground, and thence to the top it is 12 ft. in diameter. The total height is 300 ft. The quantity of steel used in its construction was 170 tons. This stack is for the purpose of dissipating the arsenical fumes from the plant of the smelting works.

A plant for the recovery of iron ore from flue dust is being installed at the furnaces of the Warwick Iron & Steel Company, Pottstown, Pa., by the Ore Recovery Company. An improved nodulizing furnace is to be used in connection with the installation. The plant is expected to be ready for operation in the near future.

Tate, Jones & Co., Inc., Pittsburgh, have just received an order for their fuel oil burning equipment for open hearth furnaces, to be used as an auxiliary in case of natural gas shortage, to be installed in the plant of Mackintosh, Hemphill & Co., Pittsburgh.

# A New Manville Power Press

## A Single Acting Open Back Press with a New Automatic Releasing Friction

The Manville Brothers Company, 27 Benedict street, Waterbury, Conn., has brought out a new line of single acting open back presses. The press, shown in Fig. 1, is typical of the entire line which is said to be a very good form for general use. Its construction is such that the advantages of ample room for hand feeding single pieces of work, handling large sheets of metal and feeding strip metal in from the front or back or from side to side are combined. Other special features of the press are strength, convenience in operation and an automatic releasing friction, the details of which are shown in Fig. 2.

As will be apparent from an examination of the table of dimensions and the engraving of the press, the frame is stiff and well reinforced where it is necessary, which has resulted in the production of a machine that is claimed to be the heaviest and strongest of its kind on the market. In addition to its ample proportions the frame is designed for convenience in operation, and there is a large planed surface at the front and the sides of the bed for attaching feeds and fixtures. The lower connection pin can be removed if desired without taking out the slide, as the frame has overhanging bearings. The bed is deep and the size of the opening in it can be made to any dimensions specified by the purchaser. The hammered steel shaft

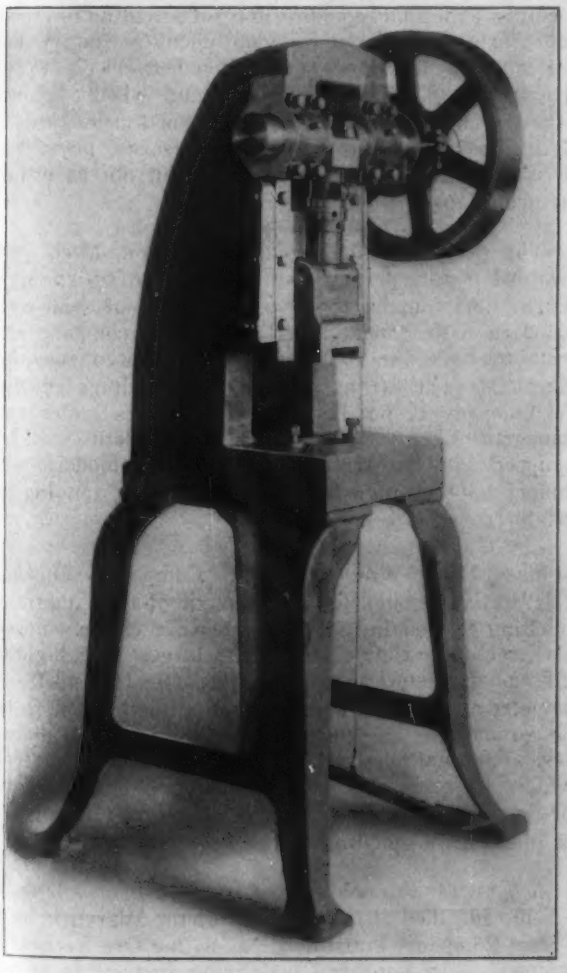


Fig. 1.—The No. 30 Single Acting Open Back Press Built by the Manville Brothers Company, Waterbury, Conn.

is very large, and the slide is strong and well braced at the back. An exceptionally long slide and ways are employed, thus giving an excellent guiding effect as well as wearing surfaces.

The friction illustrated in Fig. 2 is of the maker's automatic releasing type upon which patents have been

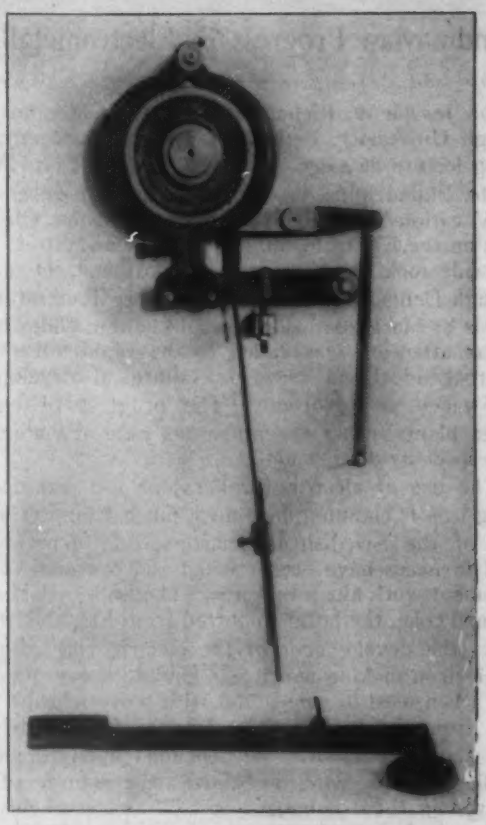


Fig. 2.—Automatic Releasing Friction Used on the Press.

applied for, and is controlled by the foot treadle. Depressing the treadle releases the friction, while as soon as the pressure is removed the treadle ascends and applies the friction with full force. This is a valuable feature on this company's presses and results in a great saving of power, repairs and attendance, particularly in a large press room.

The connection is of the sleeve type and is so arranged that when an adjustment is made the parts are securely locked by the binding screw at the front, thus giving a very strong, solid connection. In common with the four-slide wire forming machine, illustrated in *The Iron Age*, November 6, 1910, and the other machines of this company, the clutch is of the Johnson type. It is regularly arranged to run the press continuously as long as the treadle is depressed, but in special cases such as protecting the operator against accident in hand feeding it can automatically be thrown out of engagement at each revolution of the press shaft.

The following table gives the principal dimensions and specifications of the four presses which go to make up the complete line, the one illustrated being the No. 30 press.

| | No. 10 | No. 20 | No. 30 | No. 40 |
|---|---|---|---|---|
| Weight, complete, pounds | 500 | 700 | 1,250 | 1,900 |
| Weight of balance wheel, pounds | 60 | 100 | 150 | 325 |
| Diameter of balance wheel, inches | 14 | 18 | 24 | 30 |
| Face width of balance wheel, inches | 2⅝ | 3¼ | 3⅝ | 4½ |
| Standard length of slide stroke, inches | 1 | 1¼ | 1½ | 1¾ |
| Maximum length of slide stroke, inches | 1½ | 2 | 2½ | 3 |
| Distance from bed to center of shaft, inches | 17¾ | 20¾ | 24 | 27 |
| Distance between bed and bottom of slide when down, inches | 5 | 5½ | 6 | 6½ |
| Throat depth, inches | 3 | 3½ | 4 | 4½ |
| Width between uprights, inches | 5½ | 6½ | 8 | 9 |
| Center distance of die bed bolts, inches | 5⅝ | 6½ | 7½ | 8 |
| Diameter of bed opening, inches | 2⅝ | 3½ | 4½ | 5 |
| Depth of bed, inches | 6⅝ | 8½ | 10½ | 12 |
| Width of bed, inches | 11¼ | 13½ | 15⅝ | 18½ |
| Speed for average blanking, revolutions per minute | 200 | 160 | 140 | 120 |

Regularly the slides are left plain on the bottom, but if information as to the dovetail required for the punch block is furnished the builder will plane this without charge and will furnish a punch block. All of the patterns are subject to certain modifications regarding width and hight, and when required, special facings will be added for attachments. If desired this line of presses can be supplied fitted with side or throat roll feed, friction dial or ratchet dial feed or any other special attachments.

# The Gyroscope and Its Useful Possibilities—II

## Directing Torpedoes and Steadying Ships

BY ELMER A. SPERRY, NEW YORK.

It is interesting to trace the discovery of the real engineering features of the gyroscope. Apparently the principle was first enunciated by a great mathematician in England, John MacFarlane Gray, in the early seventies. He exhibited before one of the learned societies an apparatus which was somewhat similar to Fig. 3

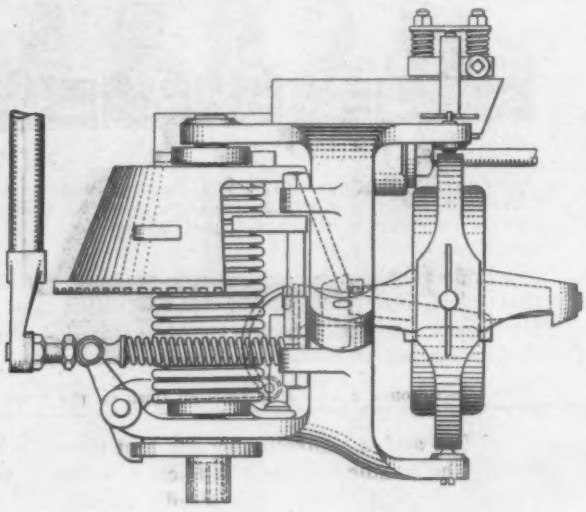


Fig. 12.—The Obry Gyroscope for Guiding Torpedoes.

(see page 1265), and he showed them this peculiar fact, that when for any reason precession cannot take place as when the brake band J is tightened upon the brake wheel I so that the inner ring C is locked with the outer ring D, if force is impressed on the base ring D to tilt it, it acts no differently when the wheel is spinning than when it is idle; it is perfectly free to tilt in either direction and no reactive forces are generated which noticeably oppose its motion.

Now comes the point that was first enunciated by this noted engineer. He said that to get the engineering benefits from the gyroscope, to obtain a reaction or opposition to the impressed forces, the wheel must be allowed to tilt in the second plane, it must be afforded facility for turning in two planes. In other words, to secure reaction precession must be allowed. The brake J must be off the wheel and the ring C must be free to tilt to the normal, the freer the better. When the precession takes place and the ring C tilts freely there is a strong resistance that tends to oppose the motions impressed upon the base ring D. Gray first called attention to that fact. He said the engineering significance of the gyroscope is due entirely to precession and quite contrary to the ordinary conception of engineers, that a wheel tends to resist motion which is designed to carry it out of its plane of action. The wheel must be mounted or pivoted so that it can precess to the normal or in a plane to the improved forces, and when it can so operate then powerful resistance is developed opposing the impressed forces; these forces can be figured in thousands of foot pounds even in a comparatively small machine.

The author spent about two years trying to locate this original model of the late MacFarlane Gray, and in August, 1909, finally succeeded in finding it. It was his intention to bring it to New York and with proper inscription place it in the Engineering Societies Building. It was given him as a matter of fact, but Mr. Maw, editor of *Engineering*, London, and who gave him valuable assistance in finally locating this model, thought at the last moment that it should be retained in England and made a request in writing to this effect the day before the author sailed, suggesting that he dictate a short inscription to be engraved upon it and accept some photographs of it. This model is now in the South Kensington Museum. It is very appropriate that such recognition should be given this piece of historic apparatus and due honor done MacFarlane Gray, especially considering the coming importance and wide engineering possibilities of the gyroscope and the large field of usefulness that is rapidly opening up for the employment of its enormous powers.

### Other Uses of the Gyroscope

The most extensive use to-day is probably the automatic steering gear in Whitehead torpedoes. This gear is simply used for the purpose of lateral guiding of the torpedo and holding it to an absolutely straight course. This little gyroscope has a secondary ring which may precess,—it offers positive resistance to any effort to turn it from its course, and this resistance is used to operate valves and through a secondary motor, the rudders. This use originated by Obry, an Austrian naval officer. See Fig. 12. F. M. Leavitt, engineer of the E. W. Bliss Company, Brooklyn, and inventor of the

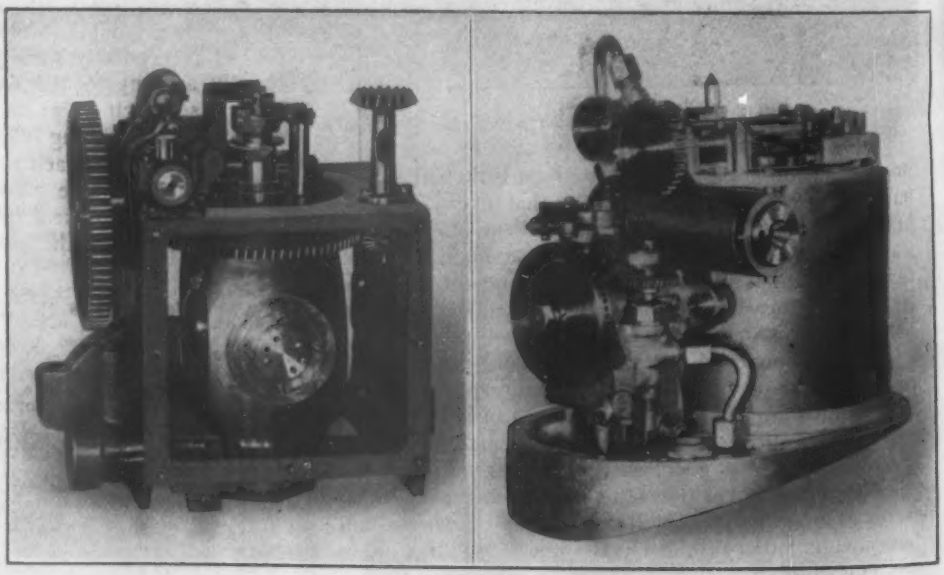


Fig. 13.—Two Types of Leavitt Gyroscope Used in the Bliss-Leavitt Torpedoes.

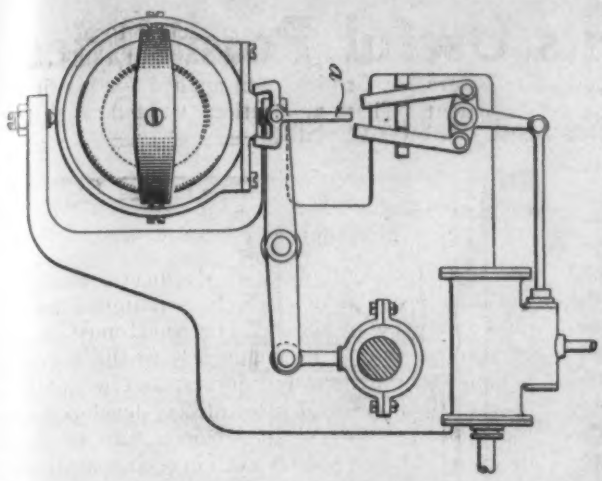


Fig. 14.—Details of the Leavitt Torpedo Directing Gyroscope.

Bliss-Leavitt torpedo, has greatly increased the efficiency of the gyro gear of torpedoes, as he has greatly improved the torpedo itself. Figuring from the increased speed and radius of action, he has increased the power factor of the old Whitehead torpedo twenty times and without materially increasing the air pressure carried. He has accomplished this by a wonderfully bold piece of engineering; that is, by automatically burnng a fuel directly in the pressure air current, thus greatly increasing its temperature. The reciprocating engine of the Whitehead is replaced by a pair of little Curtiss turbines. It should be remembered that every doubling of the absolute temperature doubles the volume, and starting with a small amount of air, an immense quantity reaches the turbine, under the requisite pressure, enormously increasing the power generated; an exceptionally interesting piece of engineering!

Fig. 13 shows two types of the Leavitt directing gyroscope. This is small and he has increased its accuracy by unloading the base ring; instead of requiring the base ring to do the work of moving a valve, its duty has been reduced to about 1-100 of that required in the Obry gear and consisting simply of giving a directive factor to an extremely small pivoted pawl at the instant the pawl is otherwise perfectly idle. Fig. 14 shows this vibrating pawl at *a*.

### Dr. Schlick's Work

Dr. Schlick, an engineer of Hamburg, Germany, to whom is due the vibrationless reciprocating marine engine, has gone further in the installation of large gyroscopes for steadying ships than any other. He has been well supported by his friends of the Hamburg-American Line, and much credit belongs to this company for its courage in financing schemes that seemed to many so impossible of practical results. Fig. 15 shows the first steamship to be equipped with the gyroscope, the See Bar.

Dr. Schlick, in studying the behavior of a side-wheeler, observed that whenever the ship rolled, and in perfect synchronism with the roll, its bow would be thrown around to the port or starboard, but with an opposite effect to that familiarly known as "yawing." As it rolled to the starboard the prow would go around to the starboard or in the same direction, and as it rolled to port the prow would pull around to port. This he described in a lecture before the British Institute of Naval Architects and Engineers, and when he was through several took issue with his assumption that this was a gyroscopic effect. They were very positive and said that Dr. Schlick was probably not aware that every boat pulled around as it rolled, and that his observation was incorrect. He insisted, however, that he saw it.

Fig. 16. Fig. 17. Fig. 18. Fig. 19. Fig. 20.

Apparatus Illustrating the Turning Moment Produced by an Inclined Revolving Wheel Analogous to the Effect Observed on a Rolling Side Wheel Steamboat.

Fig. 15.—The See Bar, the First Steamship Equipped with a Gyroscope.

The author, to witness it for himself, took passage on the worst old side-wheeler that has been allowed to persist on the course between Ostend and Dover and found that the phenomenon actually existed. By

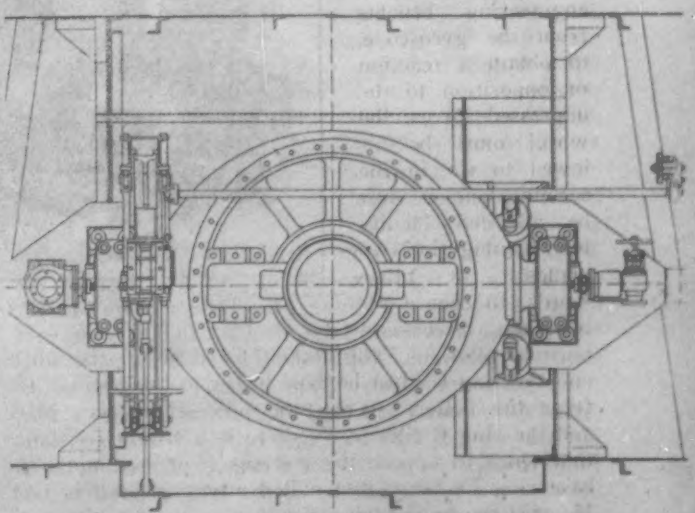


Fig. 21.—Plan View of the Stabilizing Gyroscope Placed on the See Bar.

sighting from the flag pole on the stern to objects on the receding shore, it could be seen that every time the boat listed one way or the other the stern went way over in the opposite direction, so much so that in heavy rolling it required a correction of its heading and its

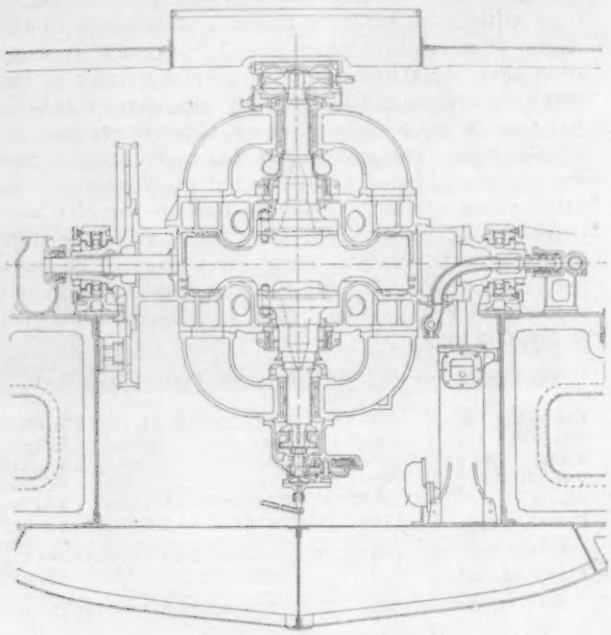


Fig. 22.—Forward Elevation.

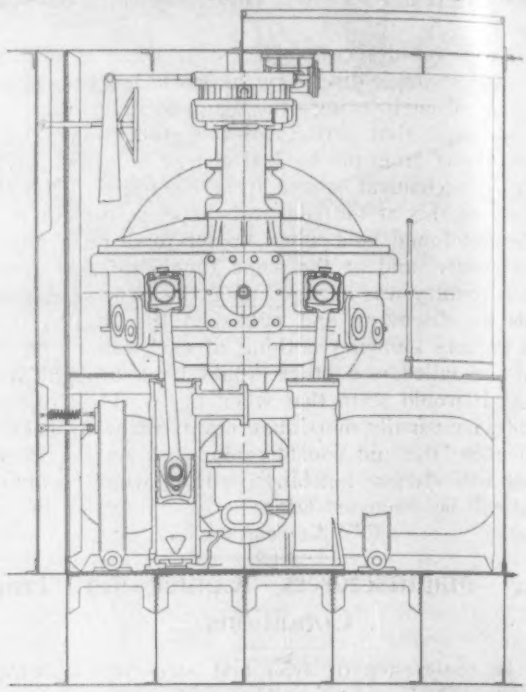


Fig. 23.—Side Elevation.

Details of the Stabilizing Gyroscope Placed on the See Bar.

old rudder chains clanked along the sides, absolutely synchronous with the roll over one way and the other.

A counterpart of this effect can be had with the apparatus illustrated in Figs. 16 to 20. This consists of the same pivoted stool shown in Figs. 1 and 2 (page 1264) with a bicycle wheel with a lead tire attached, so that its plane may be inclined to either side of the vertical. When the wheel is tipped but does not revolve, nothing takes place, but when the wheel is rotated and then inclined one way the stool revolves in that direction (see Figs. 17 and 16) and when the wheel is tipped the other way the stool turns around in the opposite direction (see Figs. 19 and 20). Just the motion that Dr. Schlick described takes place.

While Dr. Schlick did not at once build a machine, he accumulated data, and undertook to find through mathematics and by the aid of other mathematicians the size of a gyroscope wheel he would require for a given stabilizing effect and also just what would happen to the ship. He wrote to Sir William H. White in England: "If I can hold a ship from rolling, will she ship seas? Will her decks be dry or will she ship more seas?" The great naval architect replied very promptly: "If a ship can be held from rolling, she will not ship seas; her decks will remain dry." Observation very fully bears out this verdict, because since that time Dr. Schlick has put a gyroscope on the Hamburg-American steamship Silvanna, loaned by the company for the purpose, and the author has been on board himself and knows just what happens in a rough sea.

While Dr. Schlick was pondering over the problem and before he made experiments, an American by the name of Forbes, in Minneapolis, where there is little water, except a small lake, decided that a gyroscope properly put in a ship should keep it from rolling. After some preliminary bathtub experiments he determined to try out a practical application, so with a fishing boat propelled by oars and equipped with a powerful gyroscope, he waited for a storm. When one came he went out to the middle of the lake, around in and out of the trough of the sea and back, and this first boat to be actually equipped with a gyroscope steadying plant behaved "as though it were in a vise." He had provided reactive force sufficient to actually hold the boat. Later he applied for a patent, quite considerably before Dr. Schlick even applied for his first German patent. These applications went through the office, an interference was declared, the dates were taken and the usual procedure gone through, and the patent office decided in favor of the American, and the broad and underlying patent was issued to Forbes. So, as sometimes transpires, when people are thinking others are acting, but Dr. Schlick is entitled to much credit.

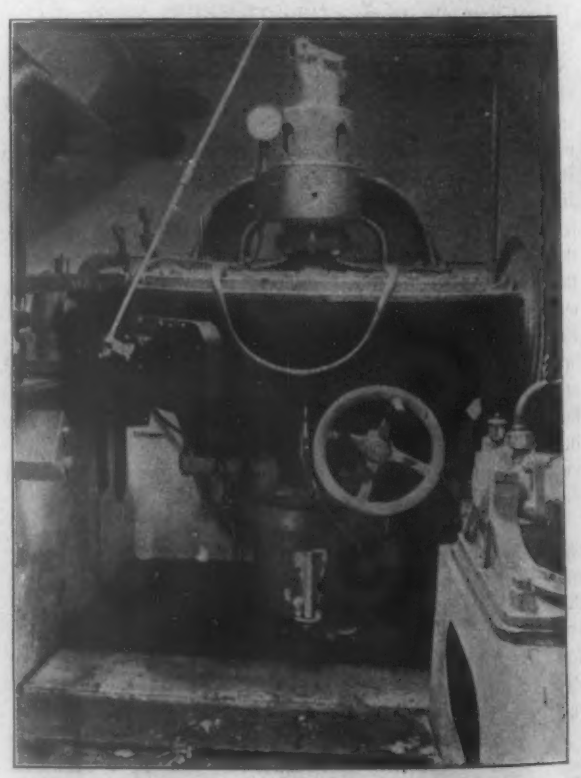


Fig. 24.—View of the Machine as Installed on the See Bar.

He was the first to apply the gyroscope on a large scale.

Being anxious to see what could be done on board ship, and being a practical engineer, Dr. Schlick called to his assistance a number of other engineering

mathematicians and designed the first machine. The working drawings are of interest and are reproduced herewith. Fig. 21 is a plan, Fig. 22 a forward elevation and Fig. 23 a side elevation. Fig. 24 shows the complete machine as it was later installed on board the See Bar.

The above deserves place with what is probably the greatest single discovery the world has ever known in practical engineering—the magneto induction. It is this principle that permits of the production of electricity direct from mechanical energy or conversely to develop mechanical power from electricity. Faraday discovered this at the end of a direct search for it, as Columbus found land when he set forth on a voyage of discovery, and at the same time Professor Henry in this country was engaged upon the same search, and made the discovery and published the results, these two workers knowing nothing of each other's efforts. Had one failed, the other would have brought it to light. It would seem that when the world is ripe for an advance usually more than one is ready to make it.

Forbes later did considerable work on the Pacific Coast with larger machines, all of which bear out what will be discussed later.

(*To be continued.*)

## Steel Manufacturers Confer on Trade Conditions

The conference of iron and steel manufacturers held at the Railroad Club, Hudson Terminal Building, New York, Wednesday, November 30, following a meeting of the directors of the American Iron and Steel Institute, was attended by the officers of about 30 important companies, representing more than 90 per cent. of the output of rolled steel products in the country. The situation relative to demand for iron and steel and current production and prices was discussed and views exchanged as to the business outlook. The following statement was given out for publication by Judge Gary, chairman of the United States Steel Corporation:

"Representatives of about 95 per cent. of the manufacturers of steel in America met at luncheon to-day and the two hours following were occupied in ascertaining the condition of business in this particular line and in the expression of opinions concerning current prices. It was stated that on the average of all branches the bookings are about 50 per cent. of capacity and the shipments somewhat in excess. There has been a slight though marked increase of daily bookings month by month since the first of August to the present time. Prices as a rule are well maintained, though in some lines as usual there is some cutting on the part of small producers who were not represented. Without exception the views expressed by those present regarding the future were favorable. Also each one voiced the opinion that present prices are fair and reasonable and should not be changed.

"For some time past purchasing by railroad companies has been very much below normal; but it is the consensus of opinion that there will be an increase in the near future. The amount of daily bookings at the present time is about equal to the capacity of the mills 10 years ago. The disposition of the manufacturers of steel to co-operate, so far as it is proper, remains unchanged."

The L. J. Smith Construction Company, Kansas City, Mo., has purchased the property of the Riverside Iron Works, Kansas City, Kans., which was in the hands of a receiver for several months. The Smith Company will use the plant for the repair of its locomotives used in railroad construction work. In addition to doing its own repair work the company will also do a general repair business for railroad companies and contractors.

## Lake Superior Iron Ore Shipments

### A New Record Made in the Season of 1910

Returns have been received by *The Iron Age* from the nine docks on Lake Superior and Lake Michigan from which shipments of iron ore were made in the season of navigation which closed November 30. They show that the shipments of iron ore by water in the past season were 42,620,206 gross tons, against 41,683,599 tons in 1909. The November movement was 2,641,898 tons. The past season was exceptional in that no ore was shipped after the end of November. In other years upward of 500,000 tons of ore has been moved in December. The table below gives the shipments from the various ports for 1910 and the three preceding years. It will be seen that the previous record, which was made in 1909, was exceeded this year by 936,607 tons:

*Iron Ore Shipments from Upper Lake Ports.—Gross Tons.*

| | 1910. | 1909. | 1908. | 1907. |
|---|---|---|---|---|
| Escanaba | 4,959,869 | 5,747,801 | 3,351,502 | 5,761,988 |
| Marquette | 3,248,930 | 2,909,451 | 1,487,487 | 3,013,826 |
| Ashland | 4,093,822 | 3,834,207 | 2,513,670 | 3,437,672 |
| Two Harbors | 8,271,169 | 9,181,132 | 5,702,237 | 8,188,906 |
| Superior | 8,437,261 | 6,540,505 | 3,564,030 | 7,440,386 |
| Duluth | 13,609,155 | 13,470,503 | 8,808,168 | 13,445,977 |
| Totals by lake | 42,620,206 | 41,683,599 | 25,427,094 | 41,288,755 |
| Totals by rail | | 903,270 | 587,893 | 975,959 |
| Total shipments | | 42,586,869 | 26,014,987 | 42,266,638 |

The all rail shipments of Lake Superior ore, which should be added to the above total of 42,620,206 tons to give the total shipments from Lake Superior mines for 1910 will not be known until after January 1, as these are reckoned for the calendar year. In each of the five years preceding 1910, with the exception of 1908, these all rail shipments have exceeded 900,000 tons. If we use that figure for 1910 the total ore movement for this year would exceed 43,500,000 tons. This is somewhat more than recent estimates have allowed for, but at the beginning of the year it was expected that 1910, if the prosperous conditions then apparent in the iron industry were maintained, would show shipments of 49,000,000 to 50,000,000 tons of Lake Superior ore.

The United States Steel Corporation's water shipments, which were above 22,550,000 tons in 1907, 14,250,000 tons in 1908 and about 21,500,000 tons in 1909, have been above 22,000,000 tons this year. The Mesaba range, which shipped 28,176,281 tons in 1909, has made a new record this year, exceeding its previous high figure as above by nearly 1,000,000 tons with a total of over 29,150,000 tons.

**The Lebanon Valley Furnace Sold.**—J. M. Shenk and George E. Meily, representing the bondholders of the Edgewater Iron Company, Lebanon, Pa., purchased November 30 the Lebanon Valley Furnace at Lebanon, Pa., long operated by J. & R. Meily, and one share in the Cornwall Ore Hill Company, Lebanon, Pa., under foreclosure proceedings, for $100,000. Bonds on the property, held by the purchasers, amount to $135,000, while the share in the ore banks is subject to a mortgage of $70,000. It is stated by the new owners that no plans have yet been formulated, but that the furnace will hardly be put in operation under present market conditions.

In a recent announcement the Zug Iron & Steel Company, Pittsburgh, manufacturer of stay bolt and other forging irons, makes this comment on the outlook: "Our conviction is that 1911 will redeem the expectations advanced for the present year, with the volume increased by the longer wait. As stocks have not been accumulated, and low figures have been so long continued, it can be expected that values will promptly respond to increased demand, and that the era of low prices will end."

## United States Navy Motor and Controller Specifications

The United States Navy Department has recently adopted a very progressive policy in the standardization of its specifications for electric motors and their controlling appliances for use on shipboard, and also at the various yards and stations on shore. Prior to the adoption of the present standard specifications, the different technical bureaus of the Navy Department, of which there were formerly five, each purchased motors under specifications of its own choosing, which specifications differed sufficiently from another to make apparatus for the same purpose materially at variance, depending upon the bureau by which it was ordered. The result of this must necessarily have been to depreciate the desirability of navy business from the standpoint of the manufacturers and increase the cost of this material to the government.

The Bureau of Construction and Repair of the Navy Department was active in this work of standardization, having promoted the adoption of uniform specifications by means of representative conferences. The specifications were prepared for the consideration of the conferences by the expert electrical aide of the Bureau of Construction and Repair, M. W. Buchanan. In addition to officers and engineers from the different bureaus of the Navy Department, the conferences included representatives from a large number of the principal American motor manufacturers and from the American Association of Electric Motor Manufacturers. The specifications as determined by the conferences are broad in their scope and as liberal as is consistent with the best American practice. They should prove equally satisfactory to customers and manufacturers.

The following specifications have been standardized in the manner above outlined, and have been issued by the Navy Department for the use of all bureaus of the department:

Specifications 17-M-1: Direct current motors for operating navy yard machinery, issued September 3, 1909; specifications 17-M-2: Induction motors for operating navy yard machinery, issued September 3, 1909, and Specifications 17-A-3: Auxiliary electrical appliances on shipboard, issued October 26, 1910.

Specifications 17-M-1 and 17-M-2 are intended to cover first-class commercial motors for general power purposes on shore. Specifications 17-A-3 are intended to cover the highest grade of motors obtainable, in which special features of construction and materials are required, having in mind the more severe nature of marine service and insurance for military preparedness.

This standardization of motor specifications is a movement in the direction of uniformity and economy in the purchase of material for the Navy Department, which was the subject of comment in an article in *The Iron Age* of April 15, 1909, entitled "Government Standards for Machinery."

**Mining Extension Work by the School of Mines of Pennsylvania State College.**—The School of Mines of the Pennsylvania State College, co-operating with the Mining Branch of the State Y. M. C. A., has undertaken an important line of mining extension work among the coal mining men of Pennsylvania and adjoining regions. Lectures on important mining topics are prepared by the School of Mines, which are printed in pamphlet form by the Y. M. C. A., and distributed, free of charge, to the miners. The Y. M. C. A. has organized a number of mining institutes, which hold regular monthly meetings. The lectures are first distributed, which allows the miner to be prepared on their subject matter and leaves the entire time at the meeting for discussion. It is the intention to follow up these written lectures by a lecture given by an instructor sent from the School of Mines, who will review the substance of the series just studied, answer questions from members of the institutes, and deliver other lectures on mining topics. Great interest has been manifested in the work already given, and there is much demand for the printed lectures. It is believed that more than 10,000 coal miners were reached during the past year.

## Awards of the Elliott Cresson Gold Medal

The Franklin Institute, Philadelphia, acting through its Committee on Science and Arts, recently awarded the Elliott Cresson gold medal, the highest in the gift of the Institute, to a number of engineers and scientists. The names are given below with a statement in each case of the particular line in which the recipient has done "distinguished leading and directive work":

Edward Weston, Newark, N. J., for work "in electrical discovery and in the advancement of electrical application."

Ernest Rutherford, professor of physics, Owens College, Victoria University, Manchester, England, for work "in the advancement of our knowledge of electrical theory."

Sir Joseph John Thomson, Cavendish professor of experimental physics, Cambridge University, England, for work "in the advancement of our knowledge of the physical sciences."

Sir Robert A. Hadfield, Sheffield, England, for work "in the advancement of our knowledge of metallurgical science."

Harvey W. Wiley, chief chemist of the Department of Agriculture, Washington, D. C., for work "in the fields of agricultural and physiological chemistry."

John Fritz, South Bethlehem, Pa., for work "in the development of the iron and steel industries."

Prof. John A. Brashear, Pittsburgh, Pa., for work "in the production and perfection of instruments for astronomical research."

The National Gas and Gasoline Engine Trades Association will hold its annual meeting in Racine, Wis., December 12 to 15. An exhibition of gas appliances will be held in the meeting room of the Association in Dania Hall. The programme includes, among others, the presentation of the following papers: "The Installation of a Mechanical Ignition System Complete," by H. F. Apple, Apple Electric Company, Dayton, Ohio; "Does the Efficiency of a Gas Engine Depend on the Equipment?" by Chas. F. Kratsch, Colborne Mfg. Company, Chicago; "The Gasoline Engine in the Agricultural Field, at Home and Abroad" by Geo. Cormack, Jr., Independent Harvester Company, Plano, Ill.; "Gas Producers" by H. F. Smith, Smith Gas Power Company, Lexington, Ohio; "Gas Engine Ignition" by Otto Heins, Bosch Magneto Company, New York; "Comparisons of Various Methods of Testing Engines" by Joseph Tracy, New York; "Gasoline Engine on the Farm" by J. G. Finkbeiner, Field-Brundage Company, Jackson, Mich.; "Guaranteeing Gas Engine Power" by C. O. Hamilton, Elyria Gas Power Company, Elyria, Ohio.

The Employers' Liability Commission of the National Association of Manufacturers met in Dayton, Ohio, last week for the purpose of outlining the policy which will be pursued by the members of the association with relation to the subject of employers' liability and workmen's compensation for industrial accidents. A special committee, consisting of James A. Emery, general attorney for the association, and F. C. Schweltman, of St. Louis, spent four months abroad studying the various compensation acts adopted by foreign countries, and made an exhaustive report of its investigation. This report will be published in book form some time during January.

# The Industrial Training of Boys—I

## Education and the Development of the Apprentice*

BY J. J. FLATHER,† MINNEAPOLIS.

It must be accepted as a self-evident truth that in order to maintain industrial supremacy there must be thorough co-operation between capital and labor to the end that the skill of the latter may be utilized to develop and increase the organized enterprise of the former.

Without going into the question of causes at the present time, it is generally understood that the present methods of keeping up the supply of skilled labor are inadequate, and some modification of these methods must be employed if we would have skilled and experienced workmen.

### The Supply of Molders a Special Need

This problem is being met in various ways, all of which exert a helpful influence toward its solution, but it is to be noted that employers in foundry work have not given this matter the attention which has been exercised by employers in other trades, nor which the importance of the subject merits. This is to be regretted, for no class of labor offers better opportunity for such effort, and in none is the promise of results greater.

In other lines of activity we find that manufacturers have established schools in connection with their work in which each boy is expected to spend a portion of his time in study closely related to the practical work which he is accomplishing in the shop. Other employers have combined and established night schools and continuation schools in which the employees are given an opportunity to broaden their technical knowledge. Then there are the city evening schools, available alike to the apprentice and the older men who want to learn more of their various trades and the studies which are related to them; such schools have been established all over the country, and every large city has its evening classes in drawing, carpentry, plumbing, machine work, pattern making and various other lines. Again we find the purely trade schools and so-called short-time trade schools in which a boy is supposed to be taught the essentials of his trade. Unfortunately some of these latter are most unsatisfactory in that they attempt to teach a boy in three months what ought to take two years. In addition to these, there have been established various correspondence schools which are doing excellent work in their respective lines, but all of these methods have their limitations, however satisfactory they may prove in special cases and under favorable environment. It is, moreover, questionable whether any of the present methods would be productive of the best results, in the solution of the larger problems of training the masses from the raw material into skilled tradesmen.

### Co-operation Between Public Schools and Employers

In its larger sense the problem involves infinitely more than the training of artisans; for its solution demands intelligent co-operation between the public schools and the employers of labor, and it is this phase of the subject which I wish to present to you, not as offering definite solution, but as a suggestion which might lead to the desired co-operation and discussion, to the end that something definite may result which will not only help solve the educational problem but which will provide and maintain an abundant supply of intelligent labor, ready to be molded by the various manufacturers and other employers, to meet their respective requirements.

There is a general feeling in many quarters, especially among those who have not studied the situation thoroughly, that the general introduction of manual training in our public schools will meet all requirements. They argue that the training received in this line of work in the schools will fit a boy for his future vocation because it teaches him the use of tools and educates the eye and hand as well as the mind; but the manual training of the schools is not sufficiently intensive to be vocational.

I would advocate the teaching of manual training subjects in all our public schools, but not as industrial training. It is a developmental subject through which the pupil's intelligence is increased and his interest in his studies maintained; but manual training, as ordinarily taught in school shops by the average teacher, can in no wise be regarded as vocational. With few exceptions the time devoted to any one subject does not exceed 250 actual hours and often it is not half this number. When one considers that it requires from 8000 to 11,000 hours for a boy to learn a trade, and that he may put in 250 hours in four or five weeks, it can be readily seen that the manual training of our schools can have little weight as a preparation for vocational work.

It has, however, one marked advantage in addition to those mentioned, and this is the opportunity afforded teachers and parents, as well as the boy, in helping to determine whether or not an industrial career should be followed.

### The Present Educational System Inadequate

It requires no argument to demonstrate that, under the social and industrial conditions which exist to-day, our present educational system is inadequate to meet the demands made upon it. The Bureau of Education is about to publish a bulletin prepared by Dr. Strayer, in which it will be shown that about 25 per cent. of the pupils who enter school drop out before the end of the sixth grade; 48 per cent. do not complete the eighth grade and only 10 per cent. graduate from the high school.

Moreover, those who do continue in school are poorly prepared for any form of industrial work. The curriculum even in the elementary schools has been overloaded and unbalanced. Revision and differentiation are both imperative.

Undue loyalty to democratic ideals has prevented our school boards from differentiating their courses to any marked degree, and the attempt is made to put all pupils through the same general studies. In the commercial and business world we soon discover that all men are not equal and we must also recognize the same condition in the status of our school children and make provision accordingly. Here in the city of Chicago to-day nearly 50,000 children are "repeaters" who are spending the second or third or fourth year in the same grade and at a cost in actual outlay of over $2,000,000 per year. Special provision should be made for the education of backward and defective children, and strong industrial courses should be established for those who are not attracted by the purely academic studies, but who do evince an interest in manual work.

### The Success of Industrial Schools

The eagerness with which pupils have entered manual training courses and the interest displayed in all

* Read before the National Founders' Association, Chicago, November 16, 1910.

† Professor of Mechanical Engineering, University of Minnesota.

forms of practical work by boys formerly listless and without ambition have led in a few cases to the introduction of more practical subjects and the elimination of certain academic studies to a still greater degree than is found in the manual training schools. The success of these industrial schools has been marked, but where there is one such school there should be a hundred. This would materially aid in solving the problems before us, namely, what to do with the boy from 12 to 16 years of age and how to furnish an adequate supply of intelligent labor and skilled tradesmen.

No manufacturer or other employer wants a boy 12 or 14 years of age. Such a boy is too immature, both physically and mentally; his principal use for the first few years of employment is in the capacity of a non-producer, as a doer of odd jobs, and when he is old enough to learn a trade he finds there is little or no opportunity because he lacks the educational qualifications. He may get a job as helper in a factory and work up into the position of machine tender or some similar situation in which he absorbs a certain amount of one-sided knowledge, but this is not learning a trade.

The progress of industrialism has led to similar specialization in many lines of production, and keen competition, acting in combination with other causes, has fostered the one-machine man to the gradual exclusion of the apprentice. Economical production demands expert machine hands, but we must not lose sight of the fact that this process results in a rapidly diminishing supply of the all round tradesman and a consequent scarcity of well-trained, capable men.

### The Apprentice System Favored

While the day when a boy was bound out to his master to learn a trade is now past and gone, a well-planned apprentice system has so much in its favor that it behooves us to consider seriously the re-introduction of such a system, suitably modified to meet the present demands and conditions. Some of the larger employers of labor, recognizing that they must individually make provision to obtain and maintain a supply of skilled all round workmen, reverted to the modified apprentice system a number of years ago and now have no difficulty in filling any position from their own trained apprentices.

These systems differ materially in detail, but the general principle is the same, namely, the placing of the apprentice under some one in authority whose duty it is to see that each boy is given the proper instruction, that he is advanced from one kind of work to another, and that his mental development keeps pace with his acquisition of skill; to this end each boy must spend a certain portion of his time in studies correlated to the trade which he is attempting to learn. Usually upon the completion of the apprenticeship a bonus is given.

Such a system as this has been in operation at the Baldwin Locomotive Works for almost 10 years, and here the apprentices are indentured to serve three years or four years, depending upon their previous education. The boys, except in the first year, must attend the public night schools, as the firm does not maintain any school for its apprentices. However, those who do attend leave the shops an hour earlier and are paid for this time.

"Each subforeman or contractor has a number of boys and is held responsible for their vocational training while under his supervision. The disciplining, however, remains with the foreman of the department, subject to the head of the apprentices' department, whose duty it is to see that all obligations are strictly observed; that changes in occupation and transfers from one department to another are made; that the apprentice attends school regularly and is given abundant opportunity to acquire a thorough knowledge of his trade."—The Apprenticeship System at the Baldwin Locomotive Works, by N. A. Sample. (Annals of the American Academy of Political and Social Science, 1909.)

A modification of this plan was introduced into the Twin City Iron Works by your president, O. P. Briggs, a number of years ago. In this case one man of wide experience and infinite patience had direct charge of a group of selected boys who were responsible to the instructor alone. Work was given by the foreman to the instructor who re-assigned it to the several apprentices, at the same time showing how it could be done in the best manner. The shops draughtsman met the boys once a week and gave them instruction in mechanical drafting and the interpretation of drawings. This plan works well in a small shop and could be followed in any number of cases to good advantage.

### The Instructional Apprentice System

It is generally recognized that very few boys are sufficiently well developed, either physically or mentally, to be benefited to the fullest extent in night schools, after working at a trade all day, and for this reason we find that a number of shops are maintaining day classes for their apprentices. Some of the building trades are accomplishing the desired end by requiring attendance in the public day schools for a part of each year.

This instructional apprentice system has more recently been introduced into the shops of the New York Central lines, where a school is maintained during working hours in which the apprentices are taught mechanical drawing and certain phases of shop practice.

"At each of the larger shops are two instructors—a drawing instructor, who in most cases is the shop draftsman, and a shop instructor who gives his entire time to instructing the apprentices in their shop work and to seeing that they receive the proper shop experience."— The Apprentice System on the New York Central Lines, by C. W. Cross. (Annals of the American Academy of Political and Social Science, 1909.)

The amount of instruction journeymen give to apprentices when working with them is, of course, variable, due to the personality of both the journeyman and apprentice. The company has no means of compelling a journeyman to give an apprentice any instruction, but in the majority of cases they do so if he is an agreeable boy. It is not expected that the shop instructor will give all the instruction, but the company does expect and require the sub-foreman to give instruction as opportunity offers.

The boys work the regular hours of the shop, which is usually nine per day, and are in the class room two hours of the morning of each second day, for which they receive regularly hourly pay.

Mr. Cross, who is in charge of the apprentice system, states that the men in the shops, both foremen and workmen, have evinced considerable interest in the apprentice school, and there has been a demand for evening schools to give them the same advantages. In response to this desire evening schools have been started at a number of places.

The system is working out very satisfactorily, and on account of the opportunity offered there is now no trouble in obtaining a sufficient number of intelligent boys to enter the several trades. Not only does the system give assurance of an ample supply of skilled workmen, but in the making there is found an economic advantage, for less spoiled work is produced, and the output is actually increased.

### The General Electric's System at Lynn

Perhaps the most notable example of the instructional apprentice system is that employed by the General Electric Company at Lynn, Mass., under the direction of M. W. Alexander.*

This was started about 10 years ago as a special department which has been modified and developed from time to time, and now gives instructions to about 350 apprentices. Class rooms were established in the factory, training rooms were fitted up with especial reference to the work of instruction, and an arrangement was made whereby instructive commercial work could be transferred from the factory to the training rooms.

* See the American Society of Mechanical Engineers' *Bulletin*, January, 1910.

Here we find a grade school within a factory. The training rooms are in charge of skilled workmen who act as assistants to the superintendent of apprentices. One man is required for every 25 to 40 apprentices. A very successful feature of the training room is the employment of the apprentices themselves to act as instructors to those less advanced. This gives self-confidence and affords an opportunity to discover and develop executive ability in the apprentice.

In the development of the system the work has been extended so that it now provides for the boy with a grammar school, a high school or a technical college education. One of the recent features has been the training of machine specialists in which unskilled workmen of from 20 to 35 years of age are given instruction for a few months in lathe work, others again in boring machine work and still others in planer and milling machine work.

In the regular apprentice training, boys 15 years of age who have completed grammar school and are physically capable are taken on as apprentices. The courses in machine work and pattern making require four years, while those in brass, iron and steel molding and steam fitting require two years. For these courses the boys must be 16 years of age. All apprentices are required to spend from one and one half to two hours per day in the class room on studies correlated to their work. Full pay is received whether in the class room or shop.

Every boy, except the foundry apprentices, starts his career in the training room, where he is under the direct supervision of the superintendent. From the very outset the apprentice is required to do commercial work, which teaches the boy the value of time and money and stimulates him by making him feel his place in real industrial life.

### How Apprentices Are Transferred at Lynn

In due time the apprentices are transferred into the factory and assigned to various departments for the remainder of their apprenticeship. These apprentices are under the discipline of the shop foreman and subject to the rules of the department, yet they still belong to the superintendent of apprentices and look to him for transfer to the various classes of work and for general guidance.

At first the apprentices were transferred to the factory after a year or so, but the present tendency is to extend the period in the training rooms to three years. Mr. Alexander states that "the advantages of this system lies not only in the extended systematic training of the apprentices but also in their better general supervision during the most impressionable period of their lives."

Courses for draftsmen, tester and erector apprentices now require a high school education for entrance and continue for three years. Studies equal to those of college grade are pursued for one and one-half to two hours a day in conjunction with the practical work. Draftsman apprentices spend about one and one-half years in machine shop training and the rest in drafting. This course, as well as the tester apprentice course, requires in addition a good deal of home study, and only young men of pronounced ability will be able to complete them satisfactorily.

In addition to these courses, business apprentices are given training in shop business, with especial reference to stock keeping and factory accounting. This course is two years in length. Other courses relate to shop training for college men.

At the Lynn factory this work is under the control of a Supervisory Committee through whose efforts many improvements have been effected. In these courses for college graduates special training is given in preparation for the sales organizations to those who elect the commercial field. For those who are to become designing, manufacturing or administrative engineers a more comprehensive course is followed.

The results bear evidence that the possibilities of apprentices under proper guidance and instruction are remarkable if their ambition and interest in the work are aroused. This good and intelligent work, Mr. Alexander states, could not be accomplished if the class-room instruction, which is correlated with the practical training, did not make the apprentices mentally alert and place them in a position to read working drawings without difficulty, to compute every-day arithmetical factory problems and, in general, to understand the reason for every stroke of work which they perform.

The apprentice system at Lynn is a most interesting economic experiment, broadly conceived and well carried out, the results of which have more than justified the outlay. It would seem that such a system could well be adapted to any manufacturing plant of considerable size operating under conditions somewhat similar to those existing at Lynn; but it is hardly applicable to the smaller shops in its present form, although it might readily be modified, as it is quite possible for manufacturers in a given locality to join issues regarding class instruction, and this is the only serious difficulty. One of the principal reasons why these manufacturers and others have to establish schools in connection with their work is the inability to obtain a sufficient number of boys who have been properly prepared in the public schools for the work required in industrial activities.

*(To be continued.)*

**Detroit-Fenestra Exhibit at the Cement Show.**—The Detroit Steel Products Company, Detroit, Mich., manufacturer of Detroit-Fenestra solid steel window sash, will have an interesting exhibit at the Cement Show, to be held December 14 to 20, in New York City. Such windows are particularly adapted for use in connection with concrete construction, as the sash can be adapted for any sized window opening or any style or thickness of glass. It is used extensively in factories and industrial buildings where maximum light and ventilation are required, as it does away with the use of obectionable frames and heavy mullions, and is fireproof. Recent installations have been made in the new Chicago & North Western Terminal at Chicago, New York Central shops at West Albany, Ford Motor Company's factory, Detroit; United States navy yards at Boston and Portsmouth; United States Steel Corporation's great plant at Gary, Ind.; Solvay Process Company's plant, Detroit; Michigan Alkali Company's plant, Wyandotte, Mich.

**Ingram-Richardson Enameled Signs.**—The Ingram-Richardson Mfg. Company, Beaver Falls, Pa., manufacturer of porcelain enameled iron signs, is furnishing a large number to the subsidiaries of the United States Steel Corporation, covering special notices to prevent accidents. These signs run from 3 x 6 in. to 18 x 36 in., and are in different colors and designs. Many are made up in six or seven different languages, giving such cautions as "Don't Touch, Live Wire," also "Dangerous, Man Working Above." A general sign used is 10 x 12 in., bearing a skull and crossbones on, with the word "Electrika," the sign being finished in red, black and white, and used in mills and factories in dangerous places. In addition to the above, the company is selling many factory display signs to go on roofs of buildings. In making these signs the company uses mineral colors. At the heat at which the colors are fused the signs are more brilliant and more durable than the usual painted ones.

The furnace of the Mitchell-Diggins Iron Company, Cadillac, Mich., making charcoal pig iron, was blown in November 26, after having been out for a considerable length of time for relining.

# Iron Ore and Flue Dust Briquetting

## The Schumacher and Ronay Processes—The Latter Is Used Also in Making Briquettes from Borings and Turnings

Pig iron producers have given much attention in the past decade to the problem of briquetting dust ore. The difficulties attending the use of fine ores are naturally greater with the increase in dimensions of blast furnaces. These increased dimensions and proportionately increased blast, as is well known, have added greatly to the accumulation of flue dust. This is valuable, not only owing to its high percentage of iron, but also because of the coke and lime contained in it. Many processes for solving the problem of briquetting fine ores and flue dust have been tried, and a number of these have been described in *The Iron Age*.

The German blast furnaces have made a practical success of briquetting fine ores, owing to the fact that they have been compelled to utilize waste products to a greater extent than American pig iron producers. Of the 1,500,000 tons of fine dust, which, according to Prof. G. Franke, of the Mining Academy of Berlin, constitutes the annual waste product of blast furnaces, 250,000 tons is briquetted and used as raw material. These briquettes contain an average of 35 per cent. of iron. Their value differs according to the value of rock ore delivered at the various blast furnaces. It has been clearly shown, however, that the briquetting of the flue dust is of considerable economical value in connection with pig iron production. The use of flue dust is of far greater importance in this country, since it is estimated that over 2,500,000 tons, containing a high percentage of iron, is added each year to the accumulated dust piles at blast furnaces.

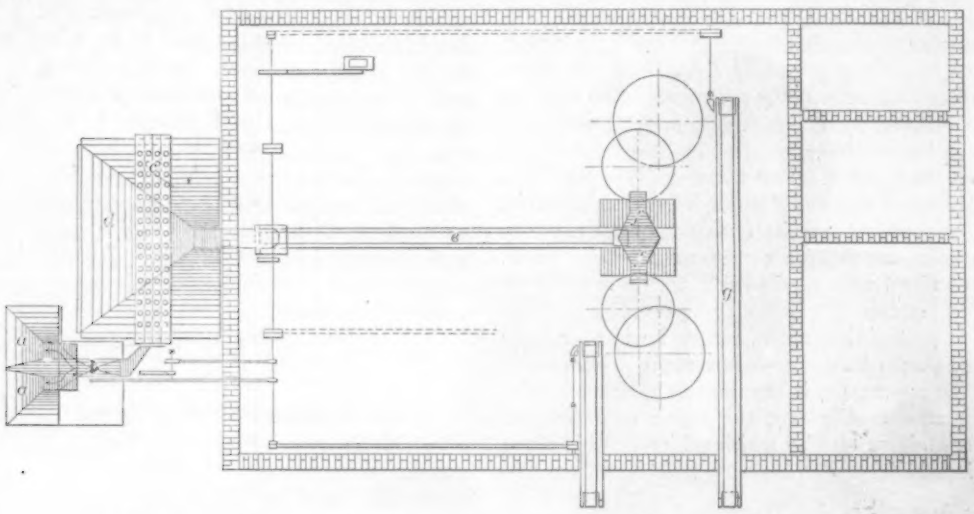


Fig. 1.—Plan of a Ronay Plant for the Briquetting of Dust Ores and Flue Dust.

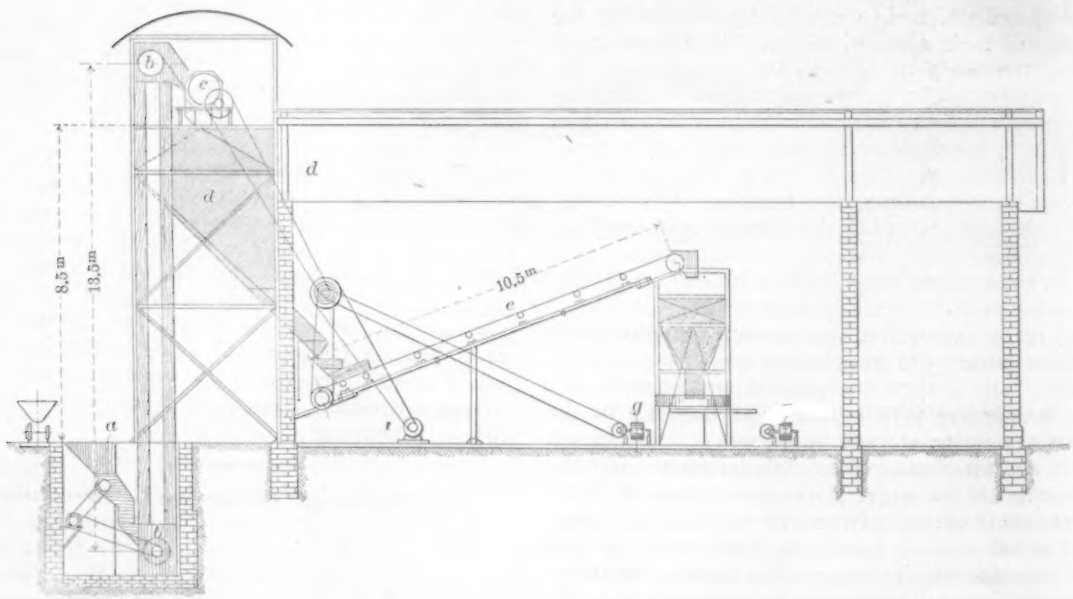



Fig. 2.—Sectional Elevation of a Ronay Plant for the Briquetting of Dust Ores and Flue Dust.

Briquetting installations have been made at many of the German blast furnaces. Some of these are of local origin and their success is dependent on local conditions. Two processes which are of established efficiency have already become well known, namely, the Schumacher and the Ronay. The former was particularly referred to in the paper of C. de Schwartz, Liege, Belgium, on "The Briquetting of Iron Ores," read at the Buxton, England, meeting of the Iron and Steel Institute, a synopsis of which was given in *The Iron Age* of October 6, 1910, page 776. Installations of the Schumacher system have been in operation in Ger-

many for some time at Königshütte in Upper Silesia; Rombacher Hüttenwerke, Rombach; Eisenhütten Aktienverein Düdelingen, Düdelingen, Luxemburg; Dortmunder Union in Dortmund; and Hasper Eisen & Stahlwerke at Haspe, Westphalia. There is also an installation at the Cockerill Works in Belgium. The Ronay system is installed and is working satisfactorily at the following plants: Oberschlesische Eisenbahnbedarfs Aktiengesellschaft, Friedenshütte, Upper Silesia; Lothringer Hüttenverein Aumetz-Friede in Kneuttingen, Lorraine, and Gutehoffnungshütte in Oberhausen. It is being used, too, at a large number of works for the briquetting of iron and other metal turnings and borings. Both systems are operated at low cost. According to German conditions, this would amount to 25 to 30 cents per gross ton.

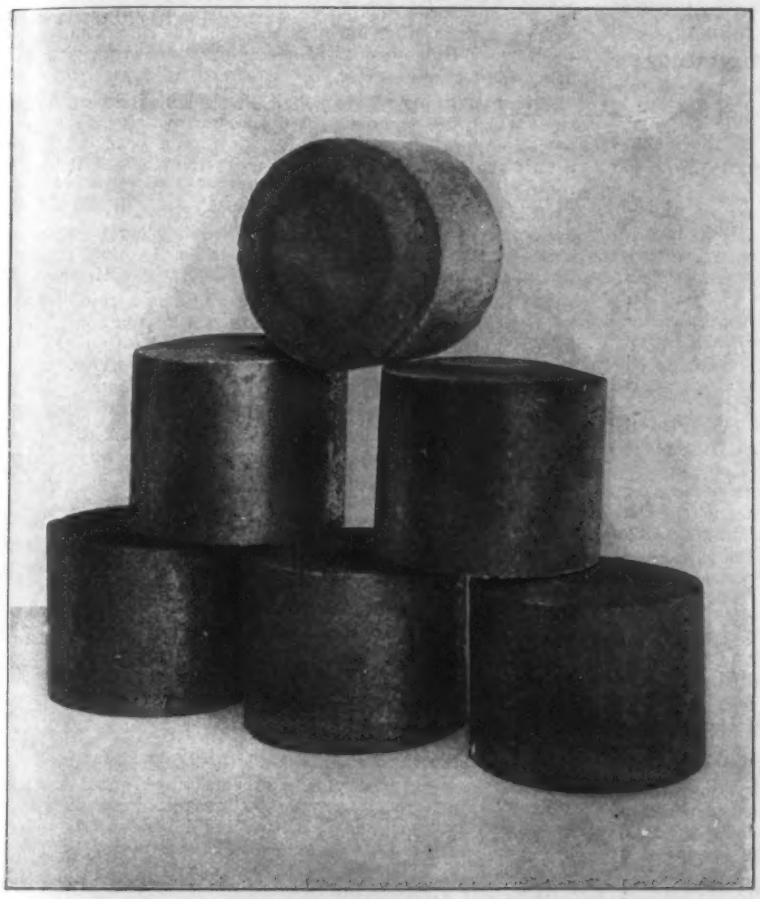


Fig. 3.—Dust Iron Ore Briquettes Made by the Roney Process.

Figs. 1 and 2 show the general arrangement of a Ronay briquetting installation. The dust ore or flue dust arrives at the storage bin *a* and is lifted by elevator *b*, and after passing through a screen *c*, in order to eliminate all the larger pieces of ore, coke or stone, it drops into the bin *d*. The screened material is transported by belt conveyor *e* to the small hopper *f*, from which it passes into the press. The finished briquettes, Fig. 3, are taken from the press by belt conveyor *g* and loaded into small cars, which run to the blast furnace.

For the handling of the installation there is needed a machinist, a man at each press and two men at each belt conveyor to discharge the briquettes. The capacity of each press is, according to the weight of the dust ore or flue dust, from five to eight tons per hour. The power necessary for the press and all auxiliary apparatus for the Schumacher process is 60 hp. For the Ronay process, it is somewhat more. The cost of the waste chemical product required with the Schumacher process—it is used rather for its catalytic action than as a binder—is put at 2½ to 5 cents per ton.

The difference in the two processes may be referred to: The Schumacher process is solely intended for the briquetting of flue dust and requires from 0.5 to 1 per cent. of the above mentioned chemical. The briquette is formed by comparatively low pressure and can be immediately loaded on cars ready for use in the blast furnace. In the Ronay system no added material is required, and the dust ore or flue dust is simply subjected to a specially applied pressure, which also gives the briquette such mechanical strength that it can be immediately loaded on blast furnace cars. In both cases, the dust ore passes directly from the receiving bin to the press without any previous modification. Their simplicity makes these two processes especially advantageous, inasmuch as the economical utilization of waste products demands as a first consideration a minimum manipulation. No binding material has to be used in either process.

The mechanical strength of these briquettes, it is claimed, is such as to permit of their use in the largest blast furnaces. It is sufficient to allow a considerable proportion of coke dust to be mixed with the flue dust, thereby adding to the quality of the waste product. The value of these processes is indicated by the fact that even at points where ore as taken from the ground is as cheap as 40 cents per ton, as in the Minette district, briquetting plants of the types referred to are now in operation.

The low operating cost of the Schumacher and Ronay systems is responsible for their use in Germany rather than the cintering method. One disadvantage of the latter is that the high temperatures cause some smelting of the material and thus hinder the reducing process in the blast furnace.

The Westinghouse Air Brake Company has decided to install at Wilmerding, Pa., a Ronay briquetting plant for the briquetting of metal turnings and borings, the order having been placed through the American representative, G. Leve, 30 Church street, New York. In Germany and elsewhere the two processes referred to have been introduced for the briquetting of ores by the Allgemeine Brikettierungs Gesellschaft. A subsidiary company, in which the important locomotive firm of A. Borsig is interested, handles the Ronay process of briquetting borings and turnings in all countries except the United States. It is known as the Hochdruck Brikettierungs Gesellschaft.

**The Pittsburgh Foundrymen's Association.**—The regular monthly meeting of the Pittsburgh Foundrymen's Association was held in the Fort Pitt Hotel on the evening of December 5, preceded by a dinner. The meeting was addressed by Robert B. Thomson, president of the Associated Foundry Foremen of Buffalo, N. Y. A large number of foremen from the foundries in the Pittsburgh district were present at this meeting upon invitation from their employers.

**The Southern Iron & Steel Company's Deficit.**—The Southern Iron & Steel Company has issued its report for six months ended June 30, 1910. The income account is as follows:

| | |
|---|---|
| Gross income | $92,765 |
| Inventory reductions, cost adjustment, expenses, interest and taxes | 92,281 |
| Operating profit | $484 |
| Deductions from income, less other income | 202,554 |
| Deficit for six months | $202,070 |

# United States Steel and Carnegie Pension Fund

## Regulations Governing Its Administration

In *The Iron Age* of December 1, 1910, a general statement was given concerning the United States Steel and Carnegie Pension Fund established this year by the joint action of the United States Steel Corporation and Andrew Carnegie. It amounts to $12,000,000 and will be administered by 12 trustees, through J. B. Erskine as manager, his headquarters being in the Oliver Building, Pittsburgh. In view of the large number of employees who are actually or prospectively eligible to receive pensions from this fund, the exceptional amount to be administered, and the great care and time given to the development of the system, we give below the rules and regulations in full, effective January 1, 1911, even though a synopsis of their main provisions has already been printed:

### Who May Obtain Pensions

1. Employees of the United States Steel Corporation or of any other corporation a majority of whose capital stock is owned or controlled by the United States Steel Corporation, or of the Board of Trustees of this Pension Fund, may obtain pensions under the following conditions:

*First.—Pensions by Compulsory Retirement.*

2. All men who have been 20 years or longer in the service and have reached the age of 70 years shall be retired and pensioned.

3. All women who have been 20 years or longer in the service and have reached the age of 60 years shall be retired and pensioned.

4. At the request of their employing officers persons employed in executive or administrative positions may be allowed to continue in active service after reaching the ages mentioned above.

*Second.—Pensions by Retirement at Request.*

5. Any man who has been 20 years or longer in the service and has reached the age of 60 years may be retired and pensioned either at his own request or at the request of his employing officer.

6. Any woman who has been 20 years or longer in the service and has reached the age of 50 years may be retired and pensioned either at her own request or at the request of her employing officer.

*Third.—Pensions for Permanent Incapacity.*

7. Any employee who has been 20 years or longer in the service and has become permanently totally incapacitated through no fault of his or her own as a result of sickness, or injuries received while not on duty, may be pensioned at the discretion of the Board of Trustees.

### Amount of Pensions

8. The monthly pensions to be paid will be made up on the following basis, subject to the provisions of section 27: For each year of service 1 per cent. of the average regular monthly pay received during the last 10 years of service.

Illustration.—An employee who has been 25 years in the service and has received an average regular monthly pay of $60 a month will receive a pension allowance of 25 per cent. of $60, or $15 a month.

9. No pension granted shall be more than $100 a month, or less than $12 a month.

### How to Obtain Pensions

PENSION BY COMPULSORY RETIREMENT.

10. Employing officers will report to the manager of the fund the name of every man who has been 20 years or longer in the service and has reached the age of 70 years, and of every woman who has been 20 years or longer in the service and has reached the age of 60 years. These reports will be sent to the president of the company concerned for his approval.

PENSIONS BY RETIREMENT AT REQUEST.

11. Any man who has been 20 years or longer in the service and has reached the age of 60 years, and any woman who has been 20 years or longer in the service and has reached the age of 50 years, who wishes to be retired and pensioned, should notify his or her employing officer.

12. Any employing officer who wishes to retire an employee who has reached the age and has had the length of service fixed for retirement by request, must notify such employee and report to the manager of the fund the request that such employee be retired and pensioned. These requests whether from an employee or an employing officer will be sent to the president of the company concerned for his approval.

PENSIONS FOR PERMANENT INCAPACITY.

13. Any employee who has served 20 years and who is permanently totally incapacitated through no fault of his or her own as a result of sickness, or injuries received while not on duty, may notify his or her employing officer and apply for a pension. Every such application will be sent by the employing officer to the president of the company concerned for his approval. In every such case it must be shown to the satisfaction of the Board of Trustees by physical examination that the employee applying for a pension is permanently totally incapacitated to earn a livelihood.

### General Regulations

14. Pensions from the fund will be paid only to those employees who have given their entire time to the service of corporations included under the provisions of the fund.

15. The acceptance of a pension from the fund shall not bar any former employee from engaging in other business so long as such other business is not of the same character as the former employment. No employee receiving a pension may re-enter the service.

16. Length of service shall be reckoned from the date since which the employee has been continuously in the service to the date when retired, and a part of a year if less than a half shall not be counted; if more than a half it shall be counted as a full year.

17. Leave of absence, suspension, temporary lay-off on account of reduction in force, or disability shall not be considered as breaks in the continuity of service, and time thus lost shall not be deducted in reckoning the length of service.

18. Dismissal or voluntarily leaving the service followed by reinstatement within two years shall not be considered as breaks in the continuity of service, but the time thus lost shall be deducted in reckoning the length of service.

19. The Board of Trustees shall fix the date in each case, upon which the pensions shall begin.

20. Pensions shall be paid monthly at the close of each month, unless revoked by the board, and shall terminate with payment for the month succeeding that in which the death of the employee occurs.

21. Whenever the terms "service" and "in the service" are used in these rules they mean employment by the United States Steel Corporation, by one or more corporations a majority of whose stock is owned or controlled by the United States Steel Corporation, by their predecessors, or by the Board of Trustees of this fund.

22. Pensions may be withheld or terminated in case of misconduct on the part of the beneficiaries or for other cause sufficient in the judgment of the Board of Trustees to warrant such action.

23. In order that direct personal relations with retired employees may be preserved and that such employees may continue to enjoy the benefits of pensions granted them, no assignment of pensions will be permitted or recognized under any circumstances; neither shall pensions be subject to attachment or other legal process for debts of the beneficiaries.

24. This pension plan is a purely voluntary provision for the benefit of employees superannuated or totally incapacitated after long and faithful service, and constitutes no contract and confers no legal rights upon any employee.

25. The manager of the fund shall decide all questions arising out of the administration of the fund and relating to employees, subject to a right of appeal to the Board of Trustees within 30 days after notice to the persons interested of the manager's decision. The action of the Board of Trustees or of any committee designated by the board to hear such appeals shall be final and conclusive.

26. Neither the creation of this fund nor any other action at any time taken by any corporation included under the provisions of the fund or by the Board of Trustees shall give to any employee a right to be retained in the service, and all employees remain subject to discharge to the same extent as if this Pension Fund had never been created.

27. Whenever it may be found that the basis named for pensions shall create total demands in excess of the annual income increased by any surplus deemed applicable by the Board of Trustees, a new basis may be adopted reducing the pensions theretofore or thereafter granted so as to bring the total expenditures within the limitations fixed by the Board of Trustees. Notice of such new basis shall be given before the beginning of the year in which it may be decided to put the same into effect. These pension rules may be changed by the Board of Trustees at its discretion.

28. An annual report giving an account of the fund and its administration will be made as soon after the first of each year as practicable, and copies of such report will be posted at all mills, mines, railroads, shops and other works and published in such newspapers as may be designated by the Board of Trustees.

By order of the Board of Trustees these rules for the administration of this fund shall take effect on January 1, 1911, and shall apply to those who are in the service on and after that date.

# The Battleship and Collier Bids

## The Eight-Hour Provision Prevents Competition

WASHINGTON, December 6, 1910.—The ill effect of incorporating in the last annual naval appropriation bill a provision that the construction of the 27,000 ton battleship, two 12,500 ton fleet colliers and machinery for a second battleship authorized thereby should be carried on under the eight-hour labor law has been demonstrated more speedily than was anticipated. When bids for these four important items were opened at the Navy Department December 1, it was discovered there was absolutely no competition for either vessels or machinery. But a single bid was received for each item, and in the case of the two colliers these bids were defective and cannot be considered. The Newport News Shipbuilding & Dry Dock Company, which submitted the only bid for the new battleship, will probably be awarded the contract, and the General Electric Company may be permitted to build the machinery for the second battleship, the hull of which is required by law to be constructed in a Government navy yard.

### The Eight-Hour Provision

The provision in the naval appropriation bill requiring the work to be done "under the eight-hour labor law" is so vague and indefinite, especially in view of the scope of that statute as construed by the courts in numerous cases, that the Navy Department has been flooded with requests from shipbuilders and other manufacturers doing contract work for the Government to give it an official construction. The law officers of the Department, however, have been unable to determine the question to their own satisfaction and, therefore, have refrained from any attempt at interpretation. Inquirers have been advised that the statute "speaks for itself" and it seems probable that its force and effect will ultimately have to be determined by the courts.

Under the circumstances, all but a single shipbuilding firm decided that it was not practicable to attempt to build the 27,000 ton battleship under the law as passed by Congress. The Newport News Shipbuilding & Dry Dock Company has long followed the eight-hour legislation with close attention, having been well advised for many years by the late Judge L. E. Payson, resident counsel for the company in this city. The company's plant being exceptionally well located with reference to labor and other facilities, it did not hesitate to undertake the contract, presenting four proposals ranging from $5,760,000 to $5,830,000, the difference being based upon special specifications for machinery. All the bids are well within the $6,000,000 limit set by Congress.

### Appropriations Probably Inadequate

For the machinery of the second battleship, the hull of which is to be constructed at a Government navy yard, the General Electric Company submitted a proposal for machinery, including turbines guaranteed to develop a speed of not less than 21 knots, at $352,500. While this bid will probably be accepted, it is believed that the sum appropriated by Congress for the hull of the vessel will be insufficient to build it under the eight-hour law. In fact, the New York Navy Yard, where the battleship Florida is now in course of construction, has advised the Navy Department that the vessel cannot be built for the amount appropriated, and it is likely that at the coming session the Secretary of the Navy will ask for an additional sum to cover the anticipated deficit in the appropriations for the two vessels. It will be remembered that the cost of the construction of the battleship Connecticut, which was built at the New York Navy Yard in a contest with a private shipyard which constructed her sister ship, proved to be prohibitively high, considered from any rational business standpoint, but the experiments are being continued partly in deference to the so-called "labor" sentiment in Congress and partly because certain congressional naval experts believe that at least one navy yard should at all times be kept in readiness to build warships.

It is probable that the Navy Department will re-advertise the two colliers. The proposal of the Union Iron Works, San Francisco, to build one vessel was $1,595,500, cannot be considered because it exceeds the appropriation. The Moran Company, Seattle, Wash., submitted an informal proposal to build one of the colliers for $987,000, but the bid not being accompanied by either certified check or bond cannot be accepted. It is possible that some attempt may be made by the Navy Department to construe the eight-hour provision of the naval appropriation act before re-advertising these colliers, as it is evident that the uncertainty as to the scope of the law will operate either to prevent competition or impel manufacturers to submit bids at prohibitive figures.

### Bids for Armor

The Secretary of the Navy opened bids the same day for armor for the two battleships authorized by the new law. As the provisions of the eight-hour statute were not extended to this item, the three companies which for several years have shared these contracts—the Carnegie, Bethlehem and Midvale—again submitted substantially identical bids, namely, $480 per ton for turret armor and $420 per ton for side armor. The contracts will probably distribute the armor among the three plants in accordance with their special facilities and present engagements. W. L. C.

## A Leading German Steel Manufacturer on the American Steel Industry

Major Fritz von Stumm, general staff officer of cavalry, military expert and one of the leading steel manufacturers of Germany, has made a tour of the principal iron and steel plants of the United States. At the Hotel Astor, New York, before sailing for home last week, he expressed himself as much impressed by the high degree of organization of the steel industry in the United States and the fine condition of all the plants he inspected. He said:

"The American iron and steel industry is organized and conducted on a truly colossal scale. The degree to which thorough organization and the use of the most perfect labor saving machinery has been carried stamps the United States as being in the very forefront of the world's progress in this industry. Your steel manufacturers are without exception, so far as my observation extends, broadly progressive men. Nothing has impressed me more in the course of my visit than the courtesy of the officials of all the various establishments that I have visited. In every case they have given me every facility for informing myself regarding conditions and methods obtaining here. No better equipment for the economical and efficient production of iron and steel is to be found anywhere than exists in your great plants, and I have visited both those of the United States Steel Corporation and of the leading independents."

The plant of Stumm Bros. is one of the oldest and best known in Germany. It is located at Neuenkirchen, in Rhenish Prussia, and has been operated by the same family for more than 200 years.

The Swedish Crucible Steel Company, recently incorporated, will, it is reported, erect a plant at Hamtramck, Detroit, Mich., where the office will be located upon completion of the factory. The company will succeed to the business of the Olson Adjustable Plow Point Company, Milwaukee, Wis.

# The Hilliard & Richards Friction Clutch

## Ability to Control Application of Power and Freedom from Wear Are Two Features

A new type of friction clutch and cut-off coupling has been brought out by the Hilliard Clutch & Machinery Company, Elmira, N. Y. This clutch is a de-

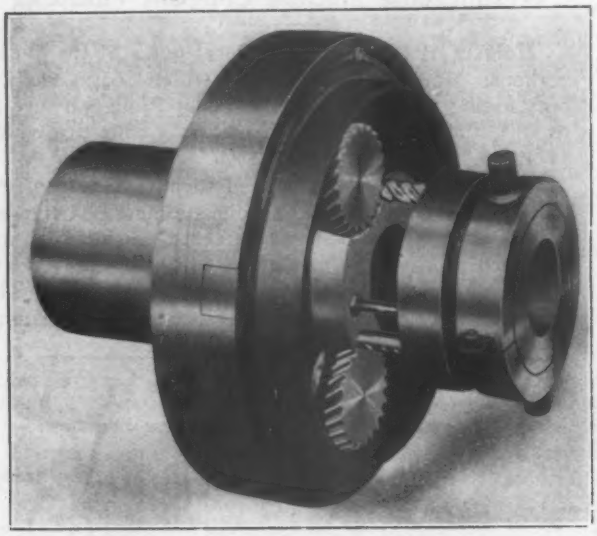


Fig. 1.—A New Type of Friction Clutch Made by the Hilliard & Richards Clutch & Machinery Company, Elmira, N. Y.

cided departure from all the types now on the market, most of which depend upon toggle joints and levers to produce the pressure on the friction surfaces. These joints and levers must be thrown past a center to lock the mechanism in working position, which not only means a straining of these levers but necessitates a readjustment of the clutch after slight wear. In the Hilliard & Richards clutch the two friction plates are drawn against the friction ring which contains a number of hardwood inserts by screws that are operated by spiral gears and turned by spiral racks attached to the sliding collar. This feature is clearly shown in Fig. 1, which is a view of the clutch, while Fig. 2 illustrates the application of the clutch to a turret lathe.

Some of the special advantages claimed for this clutch are, the screws can be turned very slowly, the tightening or loosening of the operating mechanism is not controlled by the centrifugal force, adjustments are easily made, and the interior is kept free from dust. By being able to turn the screws very slowly when desired the friction is gradually applied and the load picked up smoothly and without any sudden jerk. On this account the clutch is particularly valuable for controlling delicate machinery especially in textile mills where a sudden shock in starting might cause much damage and annoyance. Although the clutch can be used on delicate machinery it is also possible to use it on large machine tools as illustrated in Fig. 2, where a turret lathe equipped with one of these clutches is taking a very heavy cut. This clutch is particularly adapted, it is claimed, for use on high speed line and countershafts, especially as no parts of the operating mechanism have any tendency to tighten or loosen under the influence of centrifugal force.

When adjustment becomes necessary due to the wood inserts wearing, this is easily accomplished by removing the nut which locks the sliding collar in position. When this has been done the sliding collar can be drawn out and the spiral racks taken out of mesh with the gears. Turning each gear the same number of teeth to the right draws up the friction plates the same amount on all sides, and the racks can again be placed in mesh with the gears which gives a perfect adjustment and a uniform pressure throughout the friction surfaces. On account of the absence of any openings at the center through which air can be drawn the interior is kept free from dust and grit which might interfere with the efficiency of the clutch.

The various sizes of the clutch made, together with the maximum shaft bore and the horsepower transmitted are given in the following table:

| Size of clutch. Inches. | Maximum shaft bore. Inches. | Horsepower transmitted at 100 rev. per min. |
|---|---|---|
| 8 | $1^{13}/_{16}$ | 4 |
| 9 | $1^{13}/_{16}$ | 7 |
| 10 | $2^{3}/_{16}$ | 10 |
| 11 | $2^{15}/_{16}$ | 14 |
| 12 | $3^{7}/_{16}$ | 18 |
| 14 | $3^{15}/_{16}$ | 25 |
| 16 | $4^{15}/_{16}$ | 40 |
| 18 | $4^{15}/_{16}$ | 50 |
| 20 | $5^{15}/_{16}$ | 65 |

Ball thrust bearings are provided for the spiral gears to reduce the effort necessary to engage the clutch. These clutch sleeves are furnished bored and reamed and babbitted or bronzed bushed. In all the different styles there is an oil reservoir bored out of the center having suitable grooves for distributing the oil. For filling this reservoir oil holes with covers are provided, and the clutch is enabled to run for a long time with no other attention except proper lubrication as the hardwood inserts wear excellently. As there is

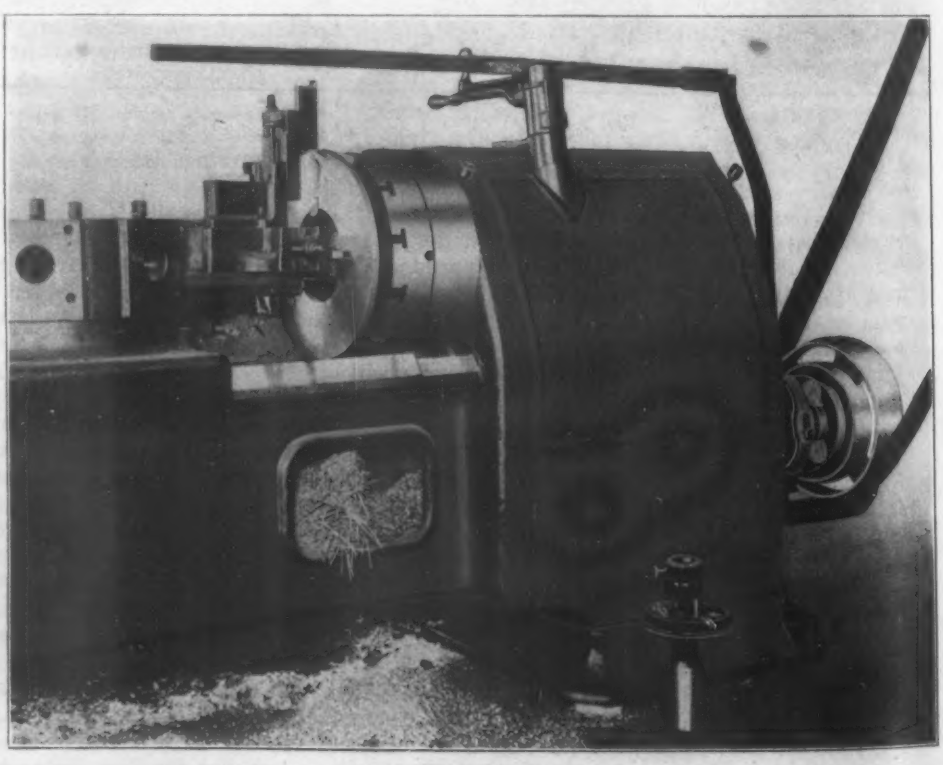


Fig. 2.—A Turret Lathe Equipped with the New Clutch.

no space between the hub or body of the clutch and the sliding collar the clutch can always be thrown in tighter, and no readjustment is required until these two parts come together when it may be easily made as described above.

## The Baird Sheet Metal and Wire Reels

For conveniently handling the wire and sheet metal used in standard and automatic wire forming machines and presses, the Baird Machine Company, Oakville, Conn., has developed a number of new types of reels. A little smaller type of reel is furnished for use with the maker's wire forming machines of various kinds which were illustrated in *The Iron Age*, January 6, February 3, and March 3, 1910, and with the open back press, an illustrated description of which appeared in *The Iron Age*, September 15, 1910.

The pins in the sheet metal and scrap reels, Figs. 1 and 2, which receive the coil of metal are easily and quickly adjusted to accommodate coils of different inside diameters. The outer flange is held in place by a thumb screw and can be easily adjusted for different strip widths. Another especially important feature of the reels is that they are interchangeable on the stud or shaft so that if the metal has to be run through the press again the reel from the scrap reel shaft with the metal on it can be put on the metal reel stud while the empty metal reel is placed on the scrap reel shaft, thus saving considerable time and labor. The flanges which are made in various diameters to suit the requirements of different classes of work have two radial slots extending through them which permits the binding wire to be cut away from the new coil after it has been placed in position on the reel and also enables the operator to bind a coil of scrap metal before removing it from the reel. This feature does away with the awkward handling caused by a loose coil and at the same time avoids the necessity of opening up the coil of metal about the room.

The drum reel, Fig. 3, is made with a floor base which is the type illustrated for use with the smaller types of standard automatic machines such as small four-slide wire forming machines, those for making garment hooks and others of that nature. If desired, these reels can be mounted on benches for machines making small springs, garment eyes, &c. The adjustable arm reels cover a wide range of coil diameters and in addition possess the advantage of having the ends of the fingers turned inward to catch the loose inner coils of wire and force them into place when the coil of wire is dropped on the reel, which does away with the loss of time said to have been caused by the use of the old type of finger reel where the fingers caught in all these loose coils. This reel is made with a universal arm and can be used in a horizontal position, Fig. 4, or turned at right angles so that the reel is vertical, Fig. 5.

In all the types of reels illustrated the shaft bracket can be adjusted on the stand to give a variety of hights, while the base is made very heavy. This gives a rigid reel and one that does not require fastening to the floor.

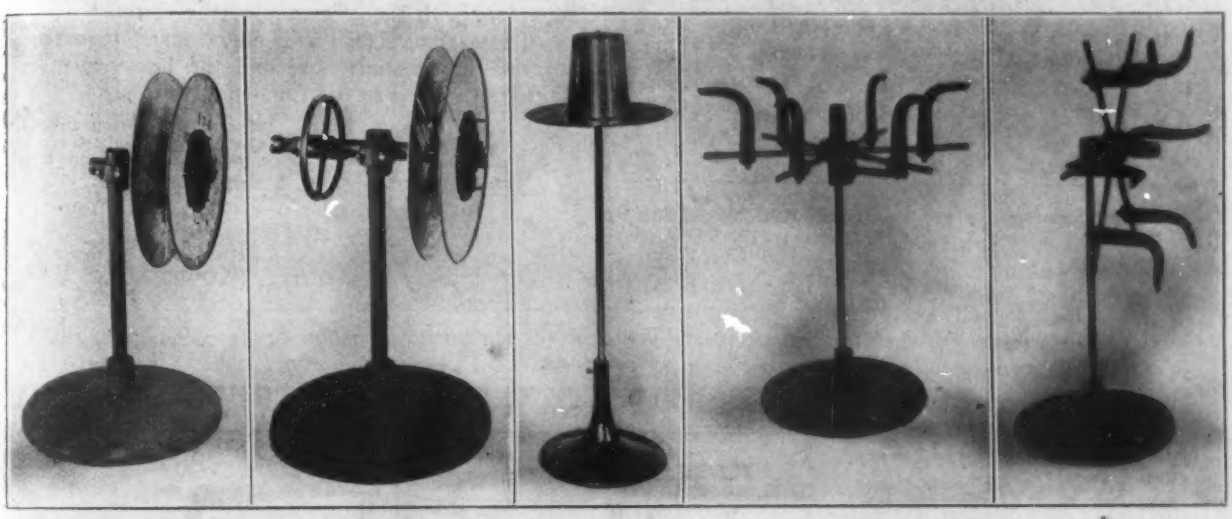


Fig. 1.—Sheet Metal Reel. Fig. 2.—Metal Scrap Reel. Fig. 3.—Drum Reel. Fig. 4.—Horizontal Universal Wire Reel. Fig. 5.—Vertical Wire Reel.

Several Types of Sheet Metal and Wire Reels Made by the Baird Machine Company, Oakville, Conn.

## Westinghouse Machine Company Financing

Holders of three-year collateral notes of the Westinghouse Machine Company, of which $6,473,000 are outstanding and which fall due about January 1, are in receipt of a letter from the Creditors' Committee which says:

"Your committee has agreed to advise noteholders that the debt of the machine company must be extended so that all noteholders may be secured. It has been determined to have the machine company authorize and issue a mortgage under the following conditions: The machine company is holder of stock of the Westinghouse Foundry Company and is a guarantor on an outstanding issue of bonds amounting to $800,000. The machine company also has outstanding debenture bonds aggregating $825,000, issued prior to those securing your notes. It has also outstanding $140,000 first mortgage serial bonds.

"A consolidation or merger will be effected whereby all properties of the Westinghouse Foundry Company shall be conveyed to the Westinghouse Machine Company and a 30-year 6 per cent. mortgage and refunding bond placed on the consolidated companies, bonds under this mortgage to be disposed of as follows: $140,000 to be held by the trustees under the mortgage to retire $140,000 serial first mortgage bonds; $800,000 to be held to retire $8,000,000 Westinghouse Foundry bonds; $825,000 to be held to retire outstanding prior debenture bonds of the Westinghouse Machine Company.

"Sufficient of these 30-year refunding bonds are to be placed with the Colonial Trust Company of Pittsburgh at 90 per cent. of par value as collateral to secure the present outstanding notes, which are to be extended for three years with interest at 6 per cent."

The H. W. Johns-Manville Company announces that, owing to greatly increased business, it has removed its offices now located at 85 Sheldon street, Houghton, Mich., to more commodious and convenient quarters at 96 Sheldon street. S. T. Harris, who has been associated with the company for a number of years, will continue in charge of the Houghton branch.

# A New Electric Welding Process

## An Advance in the Art Made by the Hub Machine, Welding & Contracting Company

A new system of electrical welding has been developed by the Hub Machine, Welding & Contracting Company, 621 Cherry street, Philadelphia, Pa., by which cast iron, cast steel, wrought iron and tool and machinery steel have been successfully welded. The special feature of this system is that the heat employed can be regulated so as to secure the melting heat of the metal being welded and thus prevent burning. It is possible with this system to duplicate parts of machinery that have been broken, a feature which, where the machine is of foreign make is especially valuable as regards the saving of both expense and time. Fig. 1 shows a number of sample pieces which have been welded by this process and Fig. 2 shows a job of cutting which can also be done.

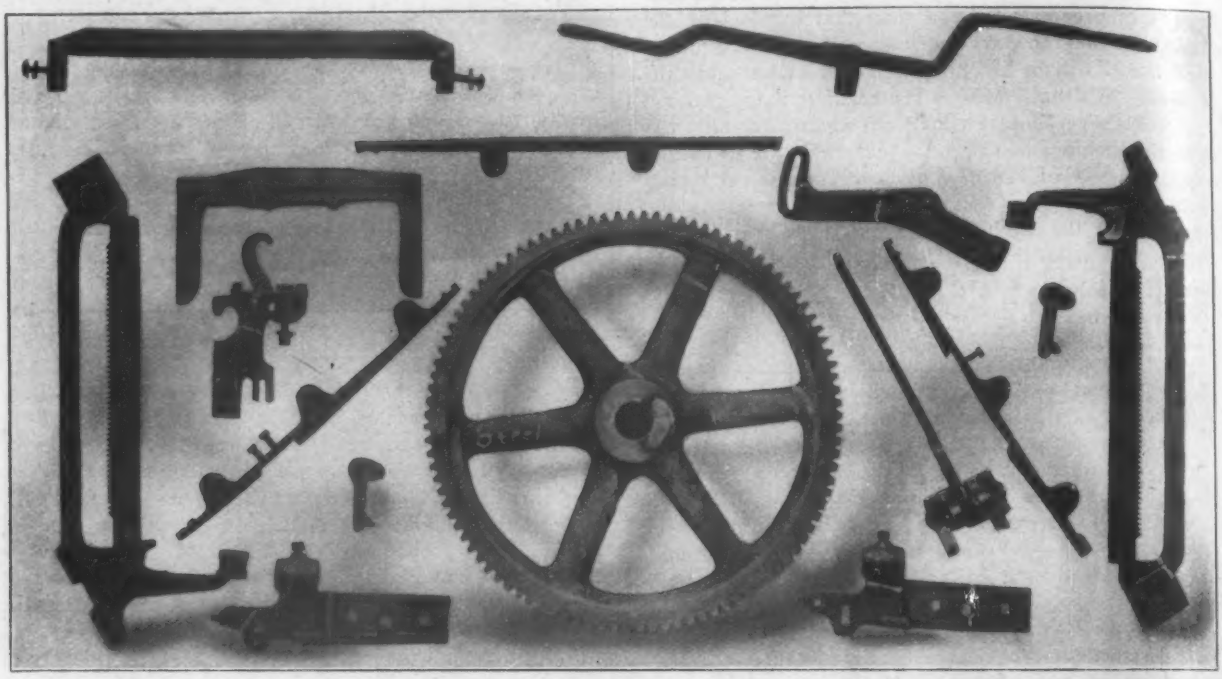


Fig. 1.—Specimen Pieces Welded by the New Electric Process Employed by the Hub Machine, Welding & Contracting Company, Philadelphia, Pa.

In welding broken parts together the pieces are clamped on a metal table which is made of one of the electrodes by connecting through a weight and cable similar to that shown in Fig. 2 to one side of the circuit. The other electrode is a carbon pencil which is connected to the opposite side. In making the weld the current passes through a flexible cable to the copper rod in the interior of the tool and from there to the carbon pencil, thence to the work and back through the cable, the current being so regulated as to produce just enough heat to melt the metal that is being welded. Where it is desired to repair a casting or forging where a lug has been broken off or lost it is desired to lengthen one which has been worn, a mold is built of a special carbon composition in the shape of the lug around the parts where the weld is to be made. The part is then brought to the melting point and metal added to fill the mold, that which is added being of the same composition as the original part.

As will be noticed from Fig. 1, the possibilities of this system are numerous. In one case where the bearings on large 10 in. rolls were worn down to 8 in. the company had welded on an 1¼ in. of metal all around the worn jounal and then turned it down to the regular size as well as straightening out the surface of the roll where it had become worn. Other special work executed by this company has included the repairing of pin valves for automobiles, the successful welding of a break in a steel bar measuring 12 x 4 in. in section and welding two oval 12 x 4 in. spokes in a 15-ft. cast iron fly wheel, which was very difficult. In a recent series of tests made at the New York office of the company, 117 West Fifty-first street, a 4 x 4 in. steel bar was welded in 20 min. with a maximum voltage of 75 volts and a current consumption of 300 amperes, the total amount used being 20 kw.hr. In making this weld the average length of arc used was from 4 to 5 in. In making welds by this process a short arc is first employed to bring the metal up to the melting point, after which the length of arc is increased to cause the metal to flow, this length being directly controlled by the operator through the variation of resistance in the circuit.

Fig. 2.—Cutting Metal by the Electric Arc Used in the New Welding Process.

In Fig. 2 it shows a recently finished order for

some new lugs on steam hammers in process of completion. At the time the photograph was taken the old lugs which were too short were being removed by heating them until they were soft enough to be cut away with a hammer. After this was done the new lugs were welded on in the customary way.

## The Waltham Bench Thread Miller

A machine that is designed to do work of smaller size and of greater precision than that handled by the larger machines now on the market has been brought out by the Waltham Machine Works, Newton and Cutter streets, Waltham, Mass. Its construction is claimed to include several features of design ordinarily not found in machines of this type that enable it to handle a larger variety of work. The special fields for which it is particularly adapted are tap making including the smallest sizes, the production of micrometer screws and other similar work. Fig. 1 is a front view of the machine, and Fig. 2 is a rear view showing details of the drive.

The cutter, which is 1½ in. in diameter, is mounted on a hardened spindle driven through a train of spur and bevel gears. The movement of the spindle is transmitted to the lead screw through a train of gears which with the change gears regularly furnished give a range of threads of from 10 to 80 per in. Special sets of change gears which increase this range from 4 to 100 threads can be furnished if desired. The cutter head can be swiveled in a vertical plane around the center line of the cutter and horizontally from a point near the spindle, while the tailstock and its spindles are milled away close to the center so that the cutter can be brought clear to the center line. The graduations for the vertical swivel are on a segment, 4 in. in diameter, and are in plain sight on the top

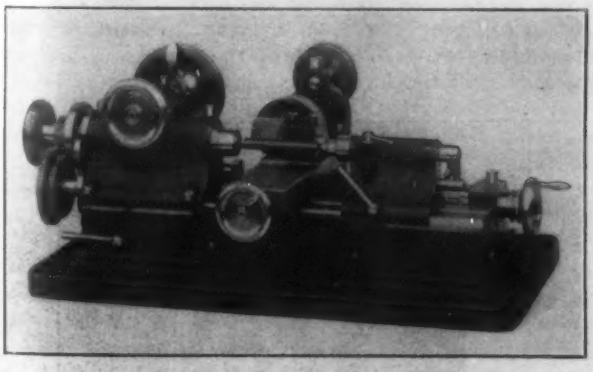


Fig. 1.—Front View of a Bench Thread Milling Machine Made by the Waltham Machine Works, Waltham, Mass.

of the head. By using the horizontal swivel and a cutter of the proper angle, a buttress thread which is perfectly square on one side can be cut, and by reversing the work and taking a second cut a square thread is obtained.

The bearing for the cross slide is 10 in. long, and the friction index for the feed screw is graduated in divisions of 0.0005 in. The feed screw nut is in a block that can be fastened either to a part of the carriage or to the sliding bar of a taper attachment, the latter providing sufficient taper for pipe taps and similar work. To guard against setting the cutter too deeply on duplicate work a stop screw is provided.

The carriage has two bearings, a V bearing 12 in. long close behind the bed and a flat one at the front of the bed. The lead screw is in the center of the former, and its center is only 3½ in. from the center line of the cutter. The nut for the lead screw is fixed as regards longitudinal movement but can be rotated slightly. Fastened to this nut is an arm the outer end of which is held against a swivel bar by a spring. Setting this bar at an angle increases or diminishes the feed of the carriage, thus giving a larger or smaller amount of lead to the work. The feed is engaged and disengaged by a hand operated clutch at the left end of the lead screw. When the cut is completed the clutch is released and the carriage returned to its starting point by the hand wheel at the right end, which has a friction index attached thereto.

The headstock spindle takes a regular lathe chuck with a capacity of ⅝ in. and is driven by a worm and

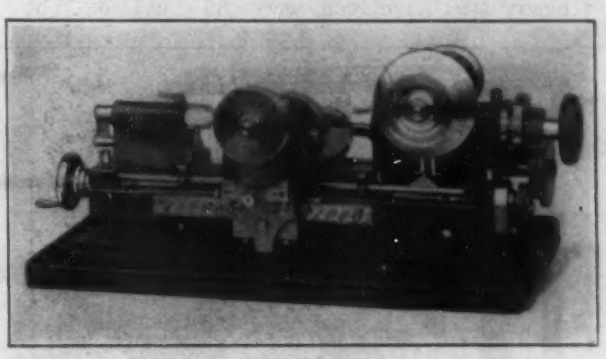


Fig. 2.—Rear View of the Miller Showing the Drive.

worm gear. The driving pulley is connected to the worm shaft by a toothed clutch, which is automatically disengaged when the cut is completed. A hand wheel serves to turn the worm spindle by hand when setting the cutters, and there is an indexing device attached to the work spindle by which double, triple or quadruple threads can be cut.

The four-step cone pulley on the worm shaft is interchangeable with the driving pulley on the countershaft. The round belt can be run to the step on either side of the one in line, which gives at least 16 feed changes.

A thread 6 in. long and not exceeding 2 in. in diameter can be cut, and if that portion of the work which is not threaded is not greater than the capacity of the chuck, ⅝ in. at one end or the diameter of the tailstock spindle, 13-16 in. at the other, its total length can be indefinite. Two tailstock spindles are furnished, one with a point and the other with a hole extending entirely through it.

This machine is what the maker terms his universal machine, but if desired a plain machine for manufacturing purposes can be supplied. In the latter machine the horizontal swivel for the cutter head, the taper turning attachment, the screw compensating bar, the extra tailstock spindle and the change gears are omitted. The machine is regularly fitted with a pan base measuring 14½ x 26½ in., and an individual oil pump can be provided if desired. The weight of the universal machine without the pump is 190 lb.

The Hanna Engineering Works, 2059 to 2113 Elston avenue, Chicago, has just obtained an order from the American Bridge Company for equipping its new plant at Gary, Ind., with 24 Hanna type compression yoke riveters, ranging in size from 4 to 60 in. reach and from 40 to 64 tons pressure on the die. With this installation the American Bridge Company will have in the neighborhood of 75 Hanna riveters in use. Recently the following concerns have also adopted the Hanna type of riveter: Walsh Boiler & Iron Works, Springfield, Mass.; National Tube Company, Pittsburgh, Pa.; Lukens Iron & Steel Company, Coatesville, Pa.; J. I. Case Threshing Machine Company, Racine, Wis.; Reeves & Co., Columbus, Ind.; S. G. Martin & Co., St. Petersburg, Russia; Canadian Pacific Railway Company, Montreal, Canada; Canada Foundry Company, Davenport, Ont., Canada.

The Long Lake Iron & Steel Company, Duluth, Minn., has been incorporated with $250,000 capital stock. H. H. Longly is president of the company.

## The Vulcan and Hercules Hand Power Shears

Two tools that are offered as time and money savers for machine, blacksmith, ornamental iron, automobile, light structural and sheet iron shops are the Vulcan

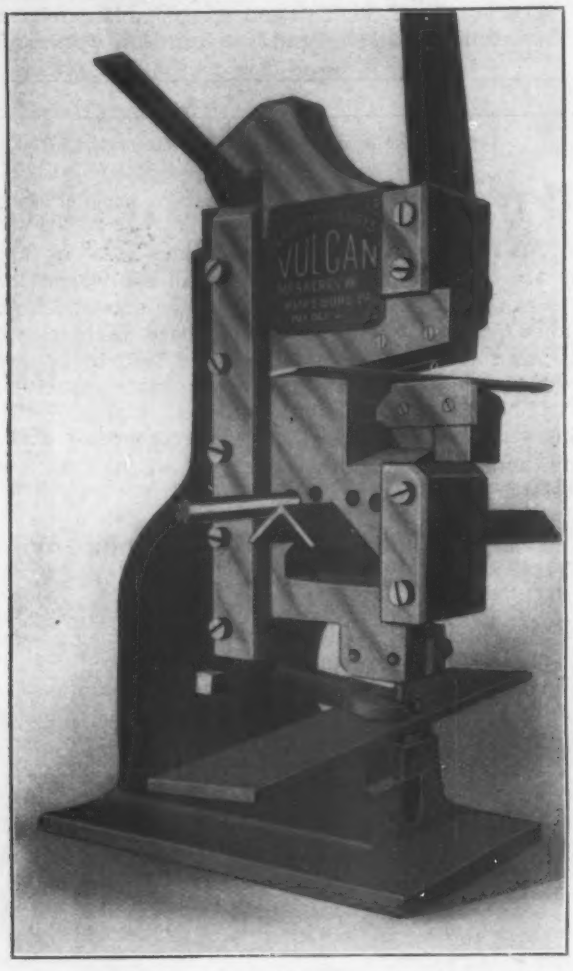



Fig. 1.—The Vulcan Combination Shear, Punch and Bending Machine, Made by the McSherry Mfg. Company, Pittsburgh, Pa.

combination shear, punch and bending machine and the Hercules shear. Both are products of the McSherry Mfg. Company, 122 Ninth street, Pittsburgh, Pa.

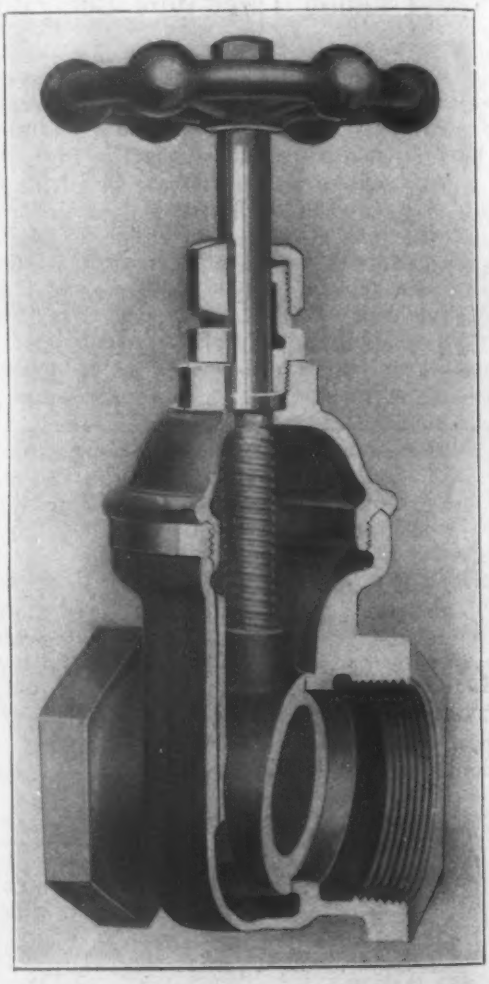
The Vulcan machine is shown in Fig. 1 and is adapted for cutting, punching and bending rounds, squares, flats or angles. It will punch a 5-16 in. hole through ¼-in. steel, shear ¼ x 2 in. steel, ½-in. rounds and 1½ x 1½ x ⅛ in. angle iron, and bend ¼ x 2 in. steel. Interchangeable punches and dies are furnished with which it is possible to do a great variety of work. The regular equipment includes five sizes of punches and dies, one die and two punches of each size from 3-16 to 7-16 in. Two die blocks are furnished to facilitate the punching of small angles. The machine is made entirely of steel, weighs 100 lb., is 6 x 11 in. at the base and 17½ in. high.


Fig. 2.—The Hercules Hand Power Shear.

The Hercules shear, Fig. 2, cuts sheet and plate steel and angles and bars at any angle. Sheet metal can be cut straight or curved, so that it is useful in making elbows, tees, &c., and miters and notches can be cut in angle iron. Two sizes are built, the smaller one cutting steel as heavy as ⅛ in., and the larger up to ¼-in. steel. The smaller machine weighs 40 lb., has 4-in. blades and occupies a space of 6 x 10 x 8 in. Its lever is 30 in. long. The larger machine weighs 190 lb., has 6-in. blades and occupies a space of 8 x 15 x 13½ in. and has a lever 72 in. long. Both machines are arranged to be secured to a bench with four bolts.

## The Gaco Brass Gate Valve

A rather interesting test was recently made upon a Gaco brass gate valve made by the Pittsburgh Gage & Supply Company, Thirtieth street and Liberty avenue, Pittsburgh, Pa. An ordinary valve which is guaranteed to withstand in service pressures not in excess of 200 lb. per square inch was subjected to double that amount of hydrostatic pressure without any flaws or leaks showing. The pressure was subsequently raised to 800 lb. without any stretch developing and was reduced to 400 lb. without any leaks becoming apparent.



Sectional View of the Gaco Gate Valve Made by the Pittsburgh Gage & Supply Company, Pittsburgh, Pa.

Some of the special features of this valve, which is made in 10 sizes, ranging from ¼ to 3 in. in diameter, are that they have nonrising stems, which enables them to be conveniently operated in a limited space, and that they will always operate successfully if placed upside down, horizontally or in other positions, as the wedge disk is of one piece, and guides on either side serve to hold it in position, thus preventing rubbing of the disk against the seat. In this valve the openings

are far in excess of the pipe area, which gives a greater thickness of metal at the parts subject to greater pressure and prevents any tendency of the valve to spring out of alignment. The body of the valve is reinforced between the hexagon and the bonnet connection with two ribs and also by the addition of 1-32 in. of metal to prevent the valve from springing longitudinally. The disk and the valve stem connection provide for the engagement of a large number of threads which insures long life to the working parts. The construction of the bonnet, stuffing box and packing rod is of the pyramid type, which permits any part to be removed without injury to the others.

The best quality of metal available is used in the construction of these valves, and the hexagon ends are tapped to the Briggs standard gauges used in all the United States standard fittings, and all parts are interchangeable through the use of special gauges and templets. The hand wheel is of the ball rim pattern and is securely fastened by a square and nut.

## The Triumph Three-Wire Generator

A new design of three-wire generator has been placed on the market by the Triumph Electric Company, Cincinnati, Ohio. The general appearance of this line of generating units is shown in Fig. 1, while Fig. 2 gives an idea of the construction of the armature. In designing and building these units the Triumph Electric Company claims to have entirely eliminated the principal objection existing heretofore to the use of three-wire machines, namely, poor commutation on unbalanced loads. The new generator is said to be absolutely sparkless on an unbalanced load.

These units are built for either belt or direct connection and in the latter case they form an exceedingly compact unit. They can be used for light and power distribution systems in areas not exceeding one or two sq. miles, but are especially adapted for furnishing light and power to large stores, office buildings and for general use in manufacturing establishments. The two-voltage feature of a three-wire distribution system is especially advantageous in the last class of service, as adjustable speed motors are being used more extensively in connection with manufacturing operations. By controlling the amount of current passing through the fields of these motors it is possible to obtain a wide range of speed because of the flexibility of the system, while at the same time a considerable saving in the amount of copper employed is effected. If desired,

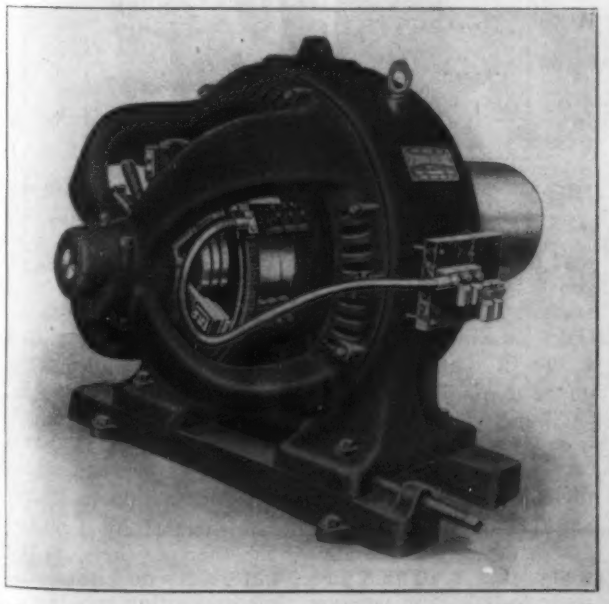


Fig. 1.—One of the New Three-Wire Generators Built by the Triumph Electric Company, Cincinnati, Ohio.

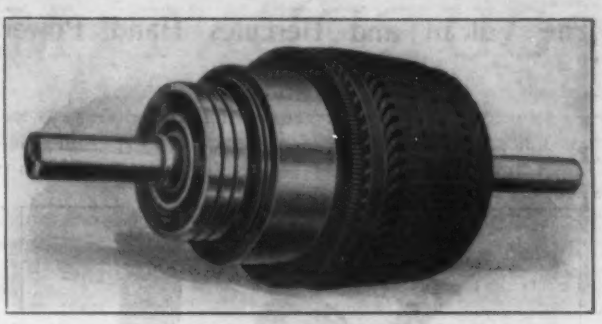


Fig. 2.—The Armature of the New Generator.

these generators can be operated in parallel with either two or three wire machines.

All the standard sizes of machines from 25 kw. up are built and the armatures of all are wound for 250 volts, which enables 125 volts to be obtained from either side of the system. The standard machines are designed to care for an unbalanced load of 25 per cent., but it is also possible to obtain other capacities. The balancing coils or transformer employed with this generator consists of three interconnected windings around laminated iron cores and are mounted in a cast iron case.

## The Petroleum Iron Works Company

The Petroleum Iron Works Company, Sharon, Pa., is fabricating two of the highest self-supporting steel stacks used at any steel mills in the United States. These stacks are provided with steel breechings and are intended for the new plant of the Republic Iron & Steel Company at Haselton, Ohio. The hight of each stack will be 250 ft. above the foundation. The shells are 11 ft. 2 in. in diameter and are flared at the base to 20 ft. diameter. Steel flues connect the boilers directly to the steel stacks. The work will be completed early next year. This company is also to build a heavy steel standpipe, 16 ft. diameter by 120 ft. high, at the same plant. It will be of the most modern construction. The company has just completed for another customer two calcining cupolas, with blast pipes, platforms and charging buckets.

Work is well on the way with the fuel oil and gasoline storage tanks for the various United States Government battleship fuel stations. Large tonnage contracts are progressing for oil tanks for California, Texas, Louisiana, Mexico and eastern United States. Among other noteworthy jobs a large penstock was recently completed at Au Train, Mich., and a 96-in. diameter penstock is just being installed at Ephratah, N. Y. A large number of orders for water storage tanks, gas separators, oil condensers, steel ladles and miscellaneous steel construction will keep the plant busy some time. R. T. McCormick, formerly Pittsburgh manager of this company, is now established at the main office at Sharon, Pa., with the title of manager of sales. W. B. Rose, formerly with the W. B. Rose Supply Company, St. Louis, is now the St. Louis sales representative, having offices in the Title Guaranty Building, while J. H. Houze has been transferred from Tulsa, Okla., to Houston, Texas. G. P. Bard of the Bard-Cate Construction Company, Boonton, N. J., has charge of the Petroleum Iron Works Company's Eastern office, 50 Church street, New York City.

The regular meeting of the mechanical section of the Engineers' Society of Western Pennsylvania was held in the society rooms in the Oliver Building, Pittsburgh, on the evening of December 6. A paper entitled "Two-Cycle vs. Four-Cycle Gas Engines" was read by E. J. Fithian, manager of the Bessemer Gas Engine Company, Grove City, Pa. The author presented his paper under the headings of construction, reliability, economy and attendance.

# CURRENT METAL PRICES.

The following quotations are for small lots, New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL—

### Bar Iron from store—

Refined Iron:

| | |
|---|---|
| 1 to 1 1/2 in. round and square | ₩ lb 1.90¢ |
| 1 1/2 to 4 in. x 1/4 to 1 in. | |
| 1 1/2 to 4 in. x 1/4 to 5-16 | ₩ lb 2.10¢ |
| Rods—3/8 and 11-16 round and square | ₩ lb 2.10¢ |

| Angles: | Cts ₩ lb |
|---|---|
| 3 in. x 1/4 in. and larger | 2.10¢ |
| 3 in. x 3 16 in. and 1/4 in. | 2.35¢ |
| 1 1/2 to 2 1/2 in. x 1/4 in. | 2.20¢ |
| 1 1/2 to 2 1/2 in. x 3-16 in. and thicker | 2.10¢ |
| 1 to 1 1/4 in. x 3-16 in. | 2.20¢ |
| 1 to 1 1/4 x 1/8 in. | 2.30¢ |
| 7/8 x 1/8 in. | 2.40¢ |
| 3/4 x 1/8 in. | 2.50¢ |
| 5/8 x 1/8 in. | 3.55¢ |
| 1/2 x 3-32 in. | 4.35¢ |

Tees:

| | |
|---|---|
| 1 in. | 2.65¢ |
| 1 1/4 in. | 2.45¢ |
| 1 1/2 to 2 1/2 x 1/4 in. | 2.15¢ |
| 1 1/2 to 2 1/2 x 3-16 in. | 2.35¢ |
| 3 in. and larger | 2.15¢ |
| Beams | 2.10¢ |
| Channels, 3 in. and larger | 2.10¢ |
| Bands—1 1/2 to 6 x 3-16 to No. 8 | 2.30¢ |
| "Burden's Best" Iron, base price | 3.15¢ |
| Burden's "H. B. & S." Iron, base price | 2.95¢ |
| Norway Bars | 3.40¢ |

### Merchant Steel from Store—

| | per lb |
|---|---|
| Bessemer Machinery | 1.90¢ |
| Toe Calk, Tire and Sleigh Shoe | 2.50@3.00¢ |
| Best Cast Steel, base price in small lots | 7¢ |

### Sheets from Store,—

| black | One Pass, C.R Soft Steel. | R. G. Cleaned. |
|---|---|---|
| No. 16 | ₩ lb 2.55¢ | 2.80¢ |
| Nos. 18 to 20 | ₩ lb 2.70¢ | 2.90¢ |
| Nos. 22 and 24 | ₩ lb 2.75¢ | 3.00¢ |
| No. 26 | ₩ lb 2.80¢ | 3.10¢ |
| No. 28 | ₩ lb 2.95¢ | 3.30¢ |

### Russia, Planished, &c.

Genuine Russia, according to assortment, ₩ lb 12 @14 1/2¢

Patent Planished, W. Dewees Wood, ₩ lb A, 10¢; B, 9¢ net.

### Galvanized.

| | |
|---|---|
| Nos. 12 and 14 | ₩ lb 2.95¢ |
| Nos. 22 to 24 | ₩ lb 3.30¢ |
| No. 26 | ₩ lb 3.50¢ |
| No. 28 | ₩ lb 3.80¢ |

No. 20 and lighter 36 inches wide, 25¢ higher.

### Genuine Iron Sheets—

Galvanized.

| | |
|---|---|
| Nos. 22 and 24 | ₩ lb 5.75¢ |
| No. 26 | ₩ lb 6.25¢ |
| No. 28 | ₩ lb 6.25¢ |

### Corrugated Roofing—

| 2 1/2 in. corrugated. | Painted | Galvd |
|---|---|---|
| No. 24 | ₩ 100 sq. ft. $3.85 | 4.90 |
| No. 26 | ₩ 100 sq. ft. 2.95 | 4.00 |
| No. 28 | ₩ 100 sq. ft. 3.00 | 3.75 |

### Tin Plates—

American Charcoal Plates (per box.)

| | |
|---|---|
| "A.A.A." Charcoal: | |
| IC, 14 x 20 | $6.35 |
| IX, 14 x 20 | 7.60 |
| A. Charcoal: | |
| IC, 14 x 20 | $5.40 |
| IX, 14 x 20 | 6.50 |

American Coke Plates—Bessemer—

| | |
|---|---|
| IC, 14 x 20 ..... 107 lb | $4.40 |
| IX, 14 x 20 | 5.40 |

American Terne Plates—

| | |
|---|---|
| IC, 20 x 28 with an 8 lb. coating | $8.50 |
| IX, 20 x 28 with an 8 lb. coating | 10.50 |

### Seamless Brass Tubes—

List November 1, 1908. Base price 18¢

### Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

### Copper Tubes—

List November 13, 1908. Base price 21¢

### Brazed Brass Tubes—

List August 1, 1908. 19¼¢ ₩ lb

### High Brass Rods—

List August 1, 1908. 14¾¢ ₩ lb

### Roll and Sheet Brass—

List August 1, 1908. 14¾¢ ₩ lb

### Brass Wire—

List August 1, 1908. 14¾¢ ₩ lb

### Copper Wire—

Base Price, . Carload lots mill 14¼¢

### Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ lb 18 ¢

Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.

Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot

Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot.

Planished Copper, 1¢ ₩ square foot more than Polished.

## METALS—

### Tin—

| | |
|---|---|
| Straits Pig | ₩ ton 39 @39.25¢ |

### Copper—

| | |
|---|---|
| Lake Ingot | ₩ lb 14 1/2@15 ¢ |
| Electrolytic | ₩ lb 14 1/2@14 5/8¢ |
| Casting | ₩ lb 14 1/2@14 5/8¢ |

### Spelter—

| | |
|---|---|
| Western | ₩ lb 6 1/4@6 3/8¢ |

### Zinc.

| | |
|---|---|
| No 9, base, casks | ₩ lb 8 1/4¢ |
| Open | ₩ lb 5¼¢ |

### Lead.

| | |
|---|---|
| American Pig | ₩ lb 5 @5¼¢ |
| Bar | ₩ lb 6 1/4@6 3/8¢ |

### Solder.

| | |
|---|---|
| 1/2 & 1/2, guaranteed | ₩ lb 21 1/2@22 ¢ |
| No. 1 | ₩ lb 21 1/2@22 ¢ |
| Refined | ₩ lb 19 @19 1/2¢ |

Prices of Solder indicated by private brand vary according to composition.

### Antimony—

| | |
|---|---|
| Cookson | ₩ lb ..@8¢ |
| Hallette | @8¢ |
| Other Brands | @7¢ |

### Bismuth—

Per lb $2.00@$2.25

### Aluminum—

| | |
|---|---|
| No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting | 30¢ |
| Rods & Wire | Base Price 31¢ |
| Sheets | Base Price 32¢ |

### Old Metals.

*Dealers' Purchasing Prices Paid in New York*

| | Cents |
|---|---|
| Copper, Heavy cut and crucible | ₩ lb 11.00@11.25 |
| Copper, Heavy and Wire | ₩ lb 10.75@11.00 |
| Copper, Light and Bottoms | ₩ lb 9.75@10.00 |
| Brass, Heavy | ₩ lb 7.25@ 7.50 |
| Brass, Light | ₩ lb 5.75@ 6.00 |
| Heavy Mechine Composition | ₩ lb 9.75@10.00 |
| Clean Brass Turnings | ₩ lb 7.25@ 7.50 |
| Composition Turnings | ₩ lb 8.25@ 8.50 |
| Lead, Heavy | ₩ lb ..@ 3.75 |
| Lead, Tea | ₩ lb ..@ 3.50 |
| Zinc Scrap | ₩ lb ..@ 4.00 |